Chemical Week

June 1, 1957

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Controversial merger-notification bill nears showdown. Here's what to expect if it passes . . . . p. 23

Building on engineering teamwork is behind Hoffmann-LaRoche's new terpene-chemicals plant . . p. 62

Printing ink usage will grow as trend to color packaging gains further momentum . . . . . p. 88

Houston public-relations problem: Lab accident looses flurry of scare rumors . . . . . p. 24

Buyers' market ahead: CW survey points to a shortage-free situation in the coming six months . . p. 35

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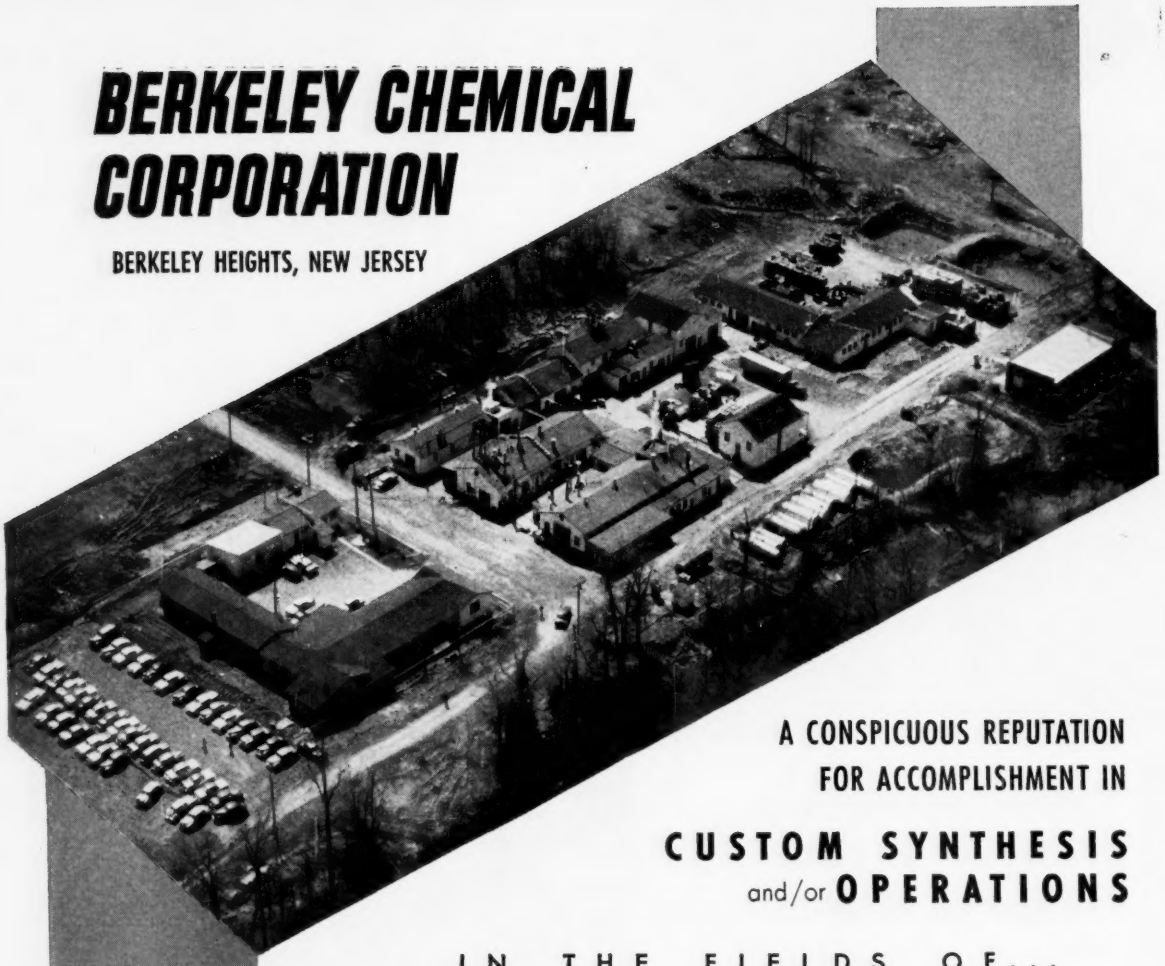

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Chemical Week

TOP OF THE WEEK

June 1, 1957

- **Study of chemical concentration is not conclusive,** but it's the best so far, author tells meeting of the National Industrial Conference Board .....p. 25
- **BDSA Chemical & Rubber Division faces personnel cut** as Senate restores only a part of House's budget slash .....p. 25
- **Target: fungicide to combat oak wilt disease.** There's a profitable market in saving $2 billion worth of oaks .....p. 55
- **Titanium catalyst is key to polycarbonate process** developed by Eastman Kodak. Here's how it compares with the work of Bayer and General Electric .....p. 57
- **Chemical firms will tighten their credit regulations.** But there's still disagreement over how tough to get .....p. 78

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23 The premerger notification bill has won House Judiciary Committee approval. It's pretty sure that the chemical industry will have to tell merger plans beforehand.

24 M. W. Kellogg's difficulties with radioactive contamination at South Houston, Tex., point up a lesson for management.

26 Appeals court decision on patentable process has this moral: don't use a process—even on an experimental basis—before applying for patents.

26 East Germany will take the leadership in Soviet Russia's plan for satellite nations' plastics production pool.

26 Threats of land subsidence above salt mines in Michigan prompt new action by legislative committees.

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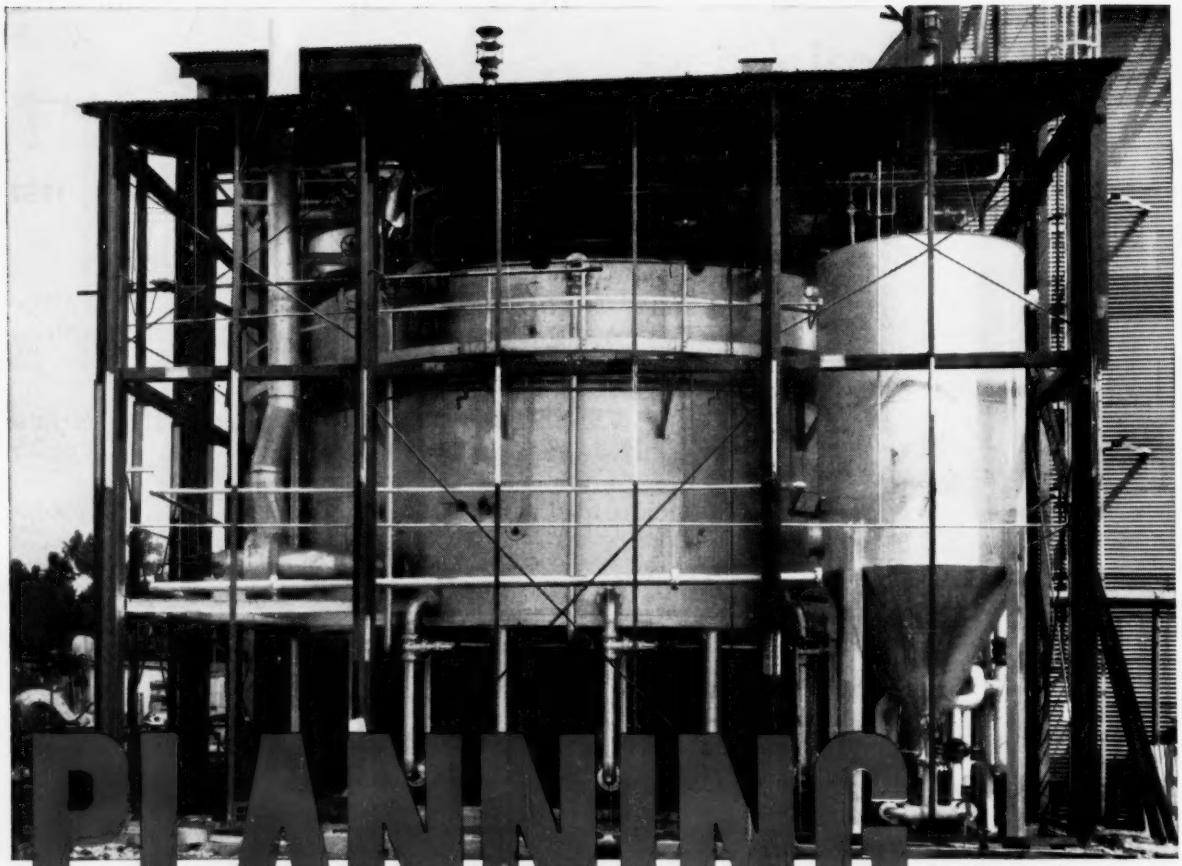
98 New head of chemical labor union strives to modernize bargaining, organizing tactics.



Giant Blaw-Knox Rotocel in plant of Honeymead Products Company, Mankato, Minnesota

PLANNING

switch to world's largest Rotocel doubled production—downtime only 13 days

To maintain a top competitive position in the soybean oil market, Honeymead Products Company decided last year to increase their production.

In 1953 Blaw-Knox had designed, engineered, and constructed a 500-ton-per-day Rotocel in Honeymead's soybean plant at Mankato, Minnesota —which was the largest unit of its type in the world.

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To install this new unit with minimum loss of production time required complex, detailed planning by Blaw-Knox engineers. For instance, before the 500-ton-per-day Rotocel was taken out of production, every piece of pipe to connect the new 1200-ton-per-day unit was measured, cut and threaded. Every bolt and lock washer was on the job.

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JUNE 1, 1957 **VOL. 80, NO. 22**

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948), founder. **Executive, Editorial, Circulation** and Advertising offices: McGraw-Hill Building, 330 West 42nd St., New York 36, N. Y. Publication office: 1309 Noble St., Philadelphia 23, Pa. See panel below for directions regarding subscriptions or change of address. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice-President, Publications Division; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President, and Director of Advertising Sales; A. R. Venezian, Vice-President and Circulation Coordinator.

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Life on the Chemical Newsfront

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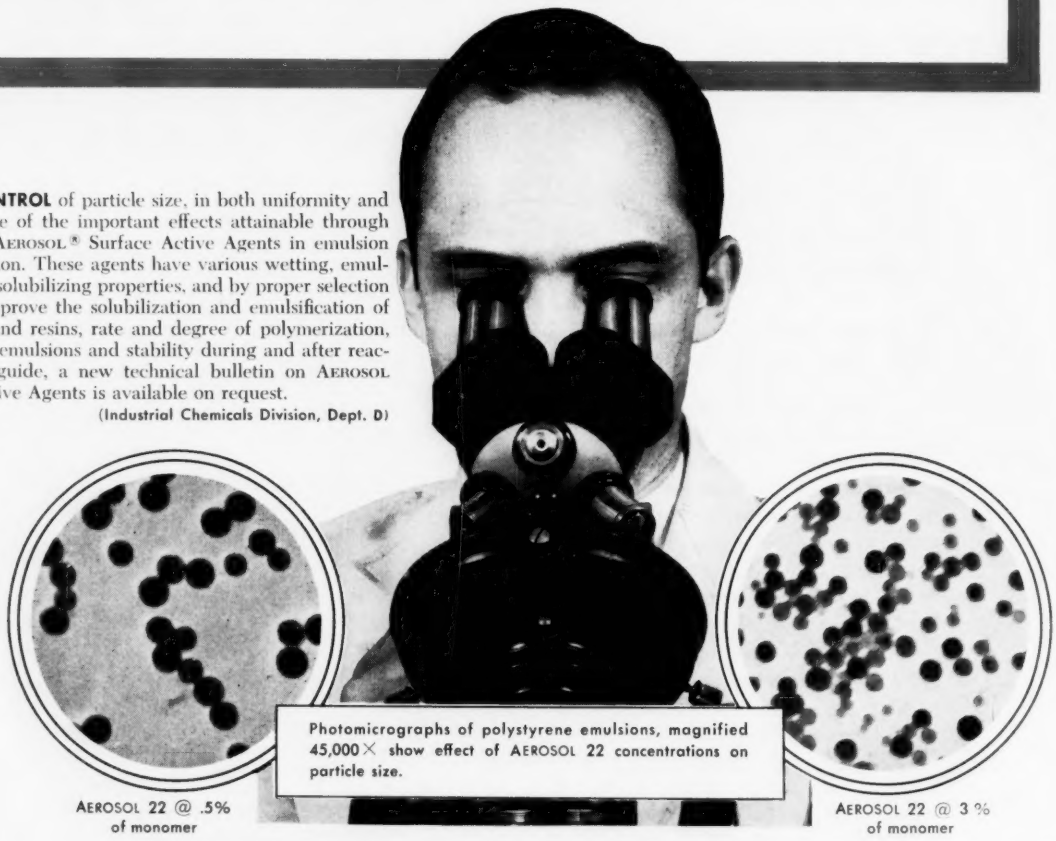
(Industrial Chemicals Division, Dept. D)



AEROSOL 22 @ .5% of monomer

Photomicrographs of polystyrene emulsions, magnified 45,000× show effect of AEROSOL 22 concentrations on particle size.

AEROSOL 22 @ 3% of monomer

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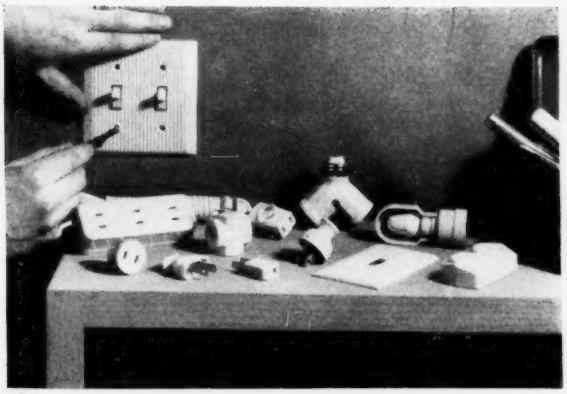

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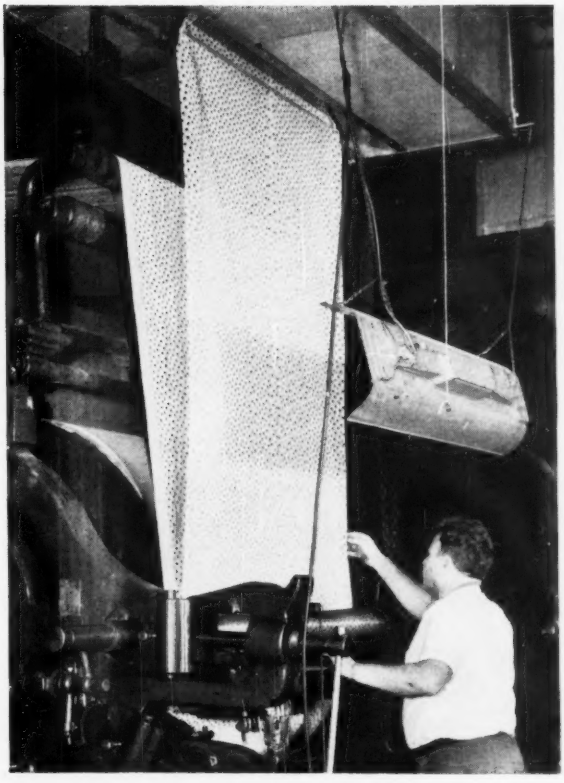
(Plastics and Resins Division)



A NEW METHOD FOR PRINTING VAT DYES from an oil-in-water emulsion has been introduced by Cyanamid. Printing vat dyes from this emulsion system† not only eliminates the troublesome starch found in conventional vat dye printing pastes, but offers many significant advantages in cost, color value, brightness of shade, running properties, and in the preparation of the emulsion as compared to conventional vat gums. Detailed information and technical assistance on the Vat Color Emulsion Printing System may be secured by writing. (Organic Chemicals Division)

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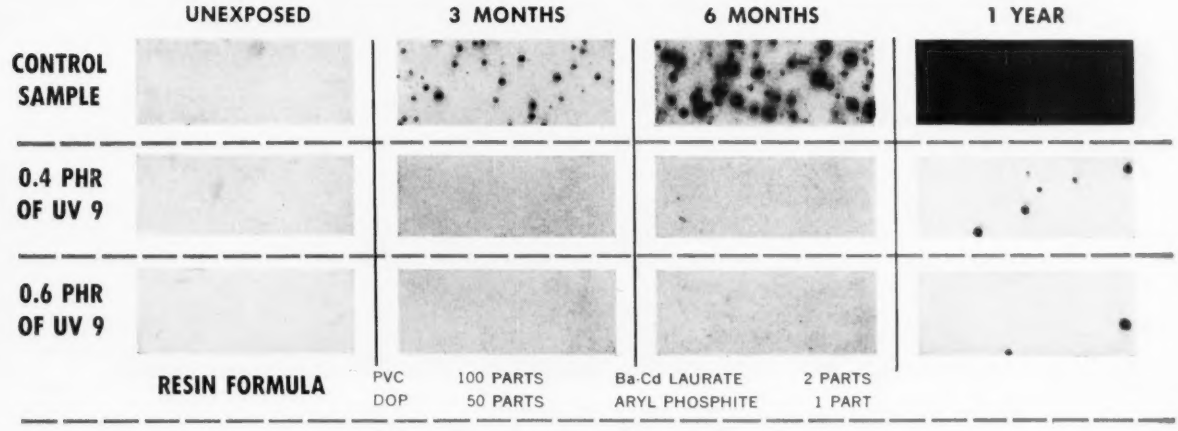

TEST PANELS SHOW HOW UV 9* Ultraviolet Absorber protects polyvinyl chloride against discoloration and deterioration when exposed outdoors. The clear control sample deteriorated completely, while samples containing UV 9 Absorber showed little degradation. Because of this striking performance, PVC uses in playthings, garden furniture, awnings, greenhouses and signs are more promising than ever. Added to PVC, polyester resins, methacrylate and styrene polymers, UV 9 protects them by converting ultraviolet radiation to harmless energy.

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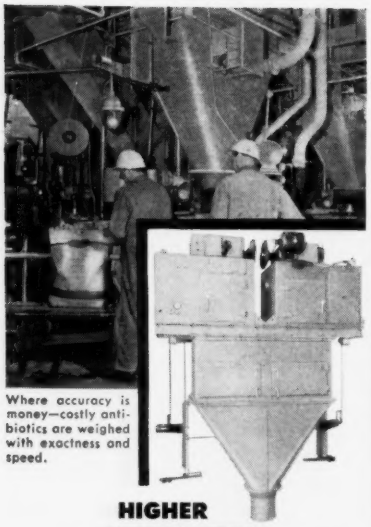

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OPINION

CCDA Co-chairman Speaks

To the Editor: . . . I was very much impressed by the fine, concise report made by your associates on the recent CCDA meeting (*April 6, p. 113*).

Reviews of this type are especially valuable to the technical man who could not attend, and also serve to awaken interest in the . . . organization promoting such a conference.

My congratulations to you all.

Harold M. Parsekian
General Sales Manager
Naugatuck Chemical
Naugatuck, Conn.

Market Research Yardstick

To the Editor: My congratulations on your recent article on market researchers (*April 27*). It appears to have been a well-thought-out survey, and I am sure the results will have considerable significance to managers of market research groups as a yardstick for comparing their organizations with others. . . .

W. G. Kinsinger
Manager
Sales Research Division
Hercules Powder Co.
Wilmington, Del.

Not a Customer

To the Editor: We recently gave you some information relative to our Formulabs ball pen inks. This subsequently was used in an article (*April 13, p. 84*). However, in that article you have put us in a rather embarrassing position. The impression is given in column 3, paragraph 4, line 9, that Paper Mate is the largest user of Formulabs ball pen inks. This is entirely erroneous, as Paper Mate is the only large manufacturer not using our inks. . . .

Clarence Schreur
President
Formulabs, Inc.
Escondido, Calif.

We followed a reference to Formulabs with the statement that Paper Mate was the largest buyer of ball pen inks. No implication was intended that Paper Mate buys from Formulabs.—Ed.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 W. 42nd St., New York 36, N.Y.

Third in White

To the Editor: I have read with great pleasure your story on the "Eighty-Million-Dollar Shine" (*April 20, p. 66*) and wish to compliment you on the excellent knowledge that you have with regard to the shoe polish business; however, there are a few things which I would like to clear up in your story.

First, Hollywood Shoe Polish, Inc., ranks third in the worldwide sale of white shoe polish, and we did not even get a mention in your article.

Second, you mentioned that Esquire and Kiwi sell exclusively to shoe stores. This statement, in my estimation, is incorrect from what I have seen with my own eyes . . . Esquire and Kiwi are both, as well as ourselves, selling through the supermarket medium.

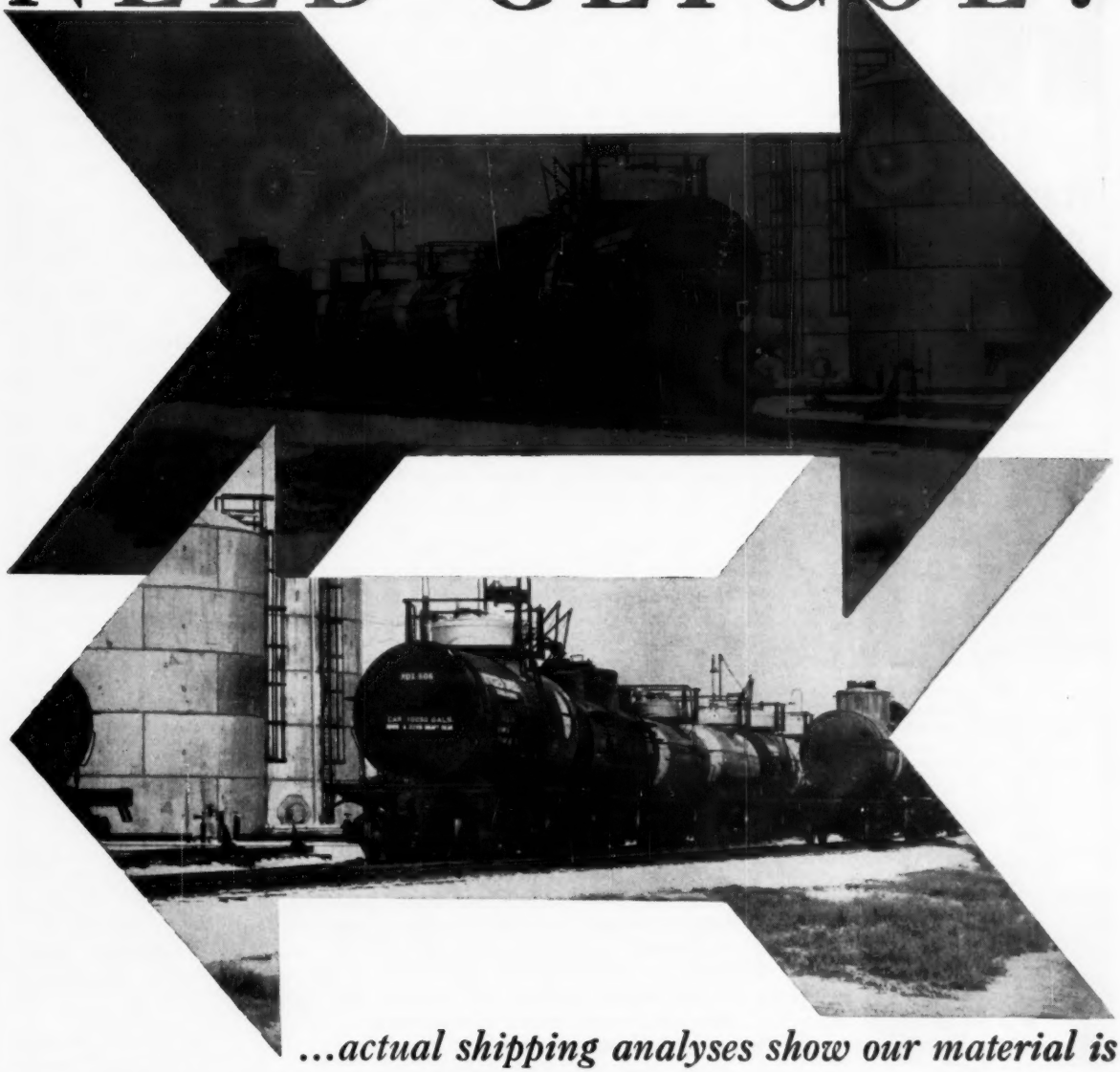
Another point . . . is that Knomark Mfg. Co. did not originate the idea of getting shoe salesmen to push polishes, as we started this practice long before the Knomark Co. was in existence. . . .

I wish to compliment you regarding your statement on lanolin in shoe polish, which is most apropos . . . However, I wish to state for the benefit of the shoe polish industry that a small amount of lanolin incorporated with the waxes during the manufacture of the polish helps the shoe polish from streaking the leather. . . . If enough lanolin were put into the shoe polish, a very poor shine would appear, because of the resulting high grease content of the polish.

Irving Sternberg
President
Hollywood Shoe Polish, Inc.
Richmond Hill, N.Y.

CW could not mention all manufacturers of shoe polish — only about

NEED GLYCOL?



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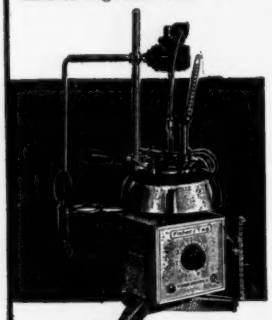

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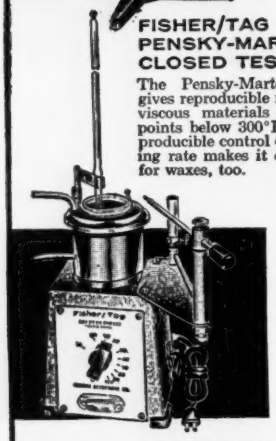

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1/10 of the material gathered was used because of space limitations. Also, because the figures hitherto available on paste polishes are much more at variance than those on white polishes, CW concentrated on these products, in an effort to update what it feels has been an erroneous conception of the size of the shoe polish market.

A close reading of the sentence "Big sellers here are Esquire, Cavalier, which sells to them exclusively, and Kiwi . . ." will reveal that only Cavalier is described as selling exclusively through shoe stores.

Similarly the article doesn't imply that Knomark originated the idea of getting shoe salesmen to push polish. What it says is, "Major credit for store sales of polish undoubtedly goes to Knomark, which originally operated exclusively via this outlet . . ."

Our thanks, too, to Reader Sternberg for his compliments. His firm has made polish for 32 years, so he qualifies as an expert witness.—ED.

Acrilan in Carpets

TO THE EDITOR: . . . I have read with interest the article, "Pacing the Fiber Climb" (*April 20, p. 126*) . . . .

Of course, all of us are salesmen at heart and, for this reason, I thought you might be interested in some of Acrilan's recent accomplishments. You state that Acrilan is now beginning to invade two other markets, blankets and outdoor wearing apparel. Actually, Acrilan is firmly entrenched in the blanket market. Our present invasion covers the rug market and our beachhead has been well established. Both the Firth Carpet Co. and Cabin Crafts, Inc., displayed rugs manufactured of 100% Acrilan at the January carpet show. Firth has made the announcement that they intend to do $5 million new business during 1957 based on Acrilan carpets . . . .

You state that Chemstrand's current Acrilan capacity is some 36 million lbs. each year. I can only say that everyone connected with Chemstrand fervently wishes this were true since, at the moment, our capacity is being sorely taxed to meet our current level of business. As you stated in your article, we are moving ahead rapidly on plans to expand our production of Acrilan by 50%, from our present 30 million lbs. capacity to 45 million lbs. . . .

I congratulate your staff on a very fine and comprehensive article. I sincerely feel that synthetic fibers will move ahead in improved properties and applications at a speed to justify the continuing interest of trade publications.

G. H. CURTIS
Market Research
Chemstrand Corp.
Decatur, Ala.

'Foremost Position'

TO THE EDITOR: . . . Regarding capital spending plans of the chemical industry for 1957 (*April 27*), not only do they present an optimistic picture of the chemical and chemical process industries' outlook, but also the information is another example of timely and informative material for which McGraw-Hill is certainly assuming a foremost position—particularly in the important field of capital spending plans.

R. B. FISKE
Vice-President
American Cyanamid Co.
New York

'N' and 'O'

TO THE EDITOR: [Re] . . . "Northwest Pulpers: Gluttons for Chemicals" (*April 27, p. 106*) . . . We would call your attention to the fact that "N" and "O" are registered trademarks of the Philadelphia Quartz Co. and are not generic terms.

FRANCES M. SUAREZ
Advertising Manager
Philadelphia Quartz Co.
Philadelphia

Press Expertise

TO THE EDITOR: I can't speculate, from my desk, on the value of the Kanawha Valley Industrial Emergency Planning Council in holding down chemical plant explosion casualties, although ordered preparedness obviously is an ally in any emergency.

I can say, however, that in the case of the Monsanto explosion (*May 11, p. 46*), the council's planning certainly held down confusion and eliminated rumors.

Newspaper, radio and television

ARE YOU SETTING UP TO HANDLE ETHANOLAMINES?

The lower costs and easier handling that result from bulk purchasing are encouraging many ethanolamines users to install bulk facilities. The checklist below lists the important installation factors, and Jefferson's bulletin on Ethanolamines* covers handling and storage information in considerable detail.

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. . . solidify at or slightly below room temperature. They will darken on exposure to air, and are hygroscopic. Iron and its oxides are relatively inert to ethanolamines, but copper and its alloys react to form complex salts.

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reporters at the explosion scene were briefed quickly and expertly by Monsanto officials and were kept informed on developments as rapidly as possible.

This courteous treatment of the press, offered even under the stress of the moment, not only resulted in correct news reports, but enabled the news media to give accurate casualty lists to hundreds of distraught relatives who called to inquire about husbands, sons and brothers who worked in the plant.

LEONARD T. ANDERSON
City Editor
The Charleston Gazette
Charleston, W. Va.

MEETINGS

Air Pollution Control Assn., joint program with ASHAE, AICWE, AMS, golden anniversary meeting, Jefferson Hotel, St. Louis, June 2-6.

Dept. of Industrial and Management Engineering of Columbia University, 8th annual conference on industrial research, Arden House, Harriman, N. Y., June 2-7.

Chemical Institute of Canada, 40th annual conference, University of British Columbia, Vancouver, B.C., June 3-5.

National Society of Professional Engineers; theme: professional development of the young engineer; Statler-Hilton Hotel, Dallas, June 5-8.

Parenteral Drug Assn., meeting, Hotel Sylvania, Philadelphia, June 7.

National Technical Career Conference and Technical Personnel Recruiting Exposition, Hotel Sherman, Chicago, June 8-12.

American Institute of Chemical Engineers, national meeting, Olympic Hotel, Seattle, June 9-12.

American Society of Mechanical Engineers, semiannual meeting, Sheraton Palace Hotel, San Francisco, June 9-14.

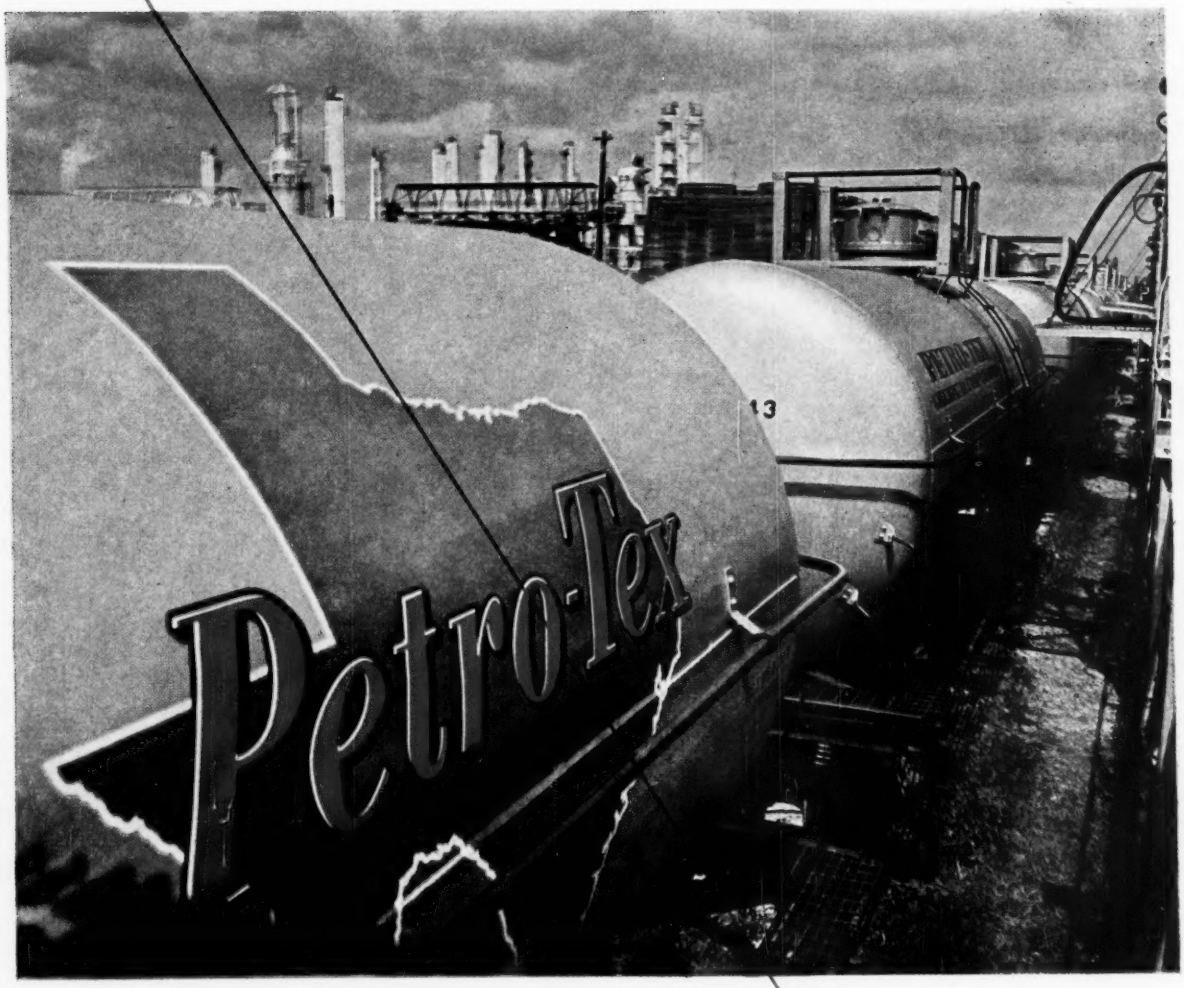
Society of Plastics Engineers; symposium: plastics for electronics; Lowell Technological Institute, Lowell, Mass., June 14.

Institute of Paper Chemistry; theme: water-derived problems of the pulp and paper industry; Appleton, Wis., June 16-July 11.

American Society for Engineering Education, 65th annual meeting, Cornell University, Ithaca, June 17-21.

American Soybean Assn. and National Soybean Processors Assn., annual meeting, Leamington Hotel, Minneapolis, Aug. 26-28.

new butadiene cars, too!



To keep pace with new production now coming on stream, we have substantially enlarged our fleet of modern tank cars. And to serve both rubber and chemical industry customers even more effectively, we are now completing a modern Research Laboratory and Pilot Plant at our Houston headquarters.

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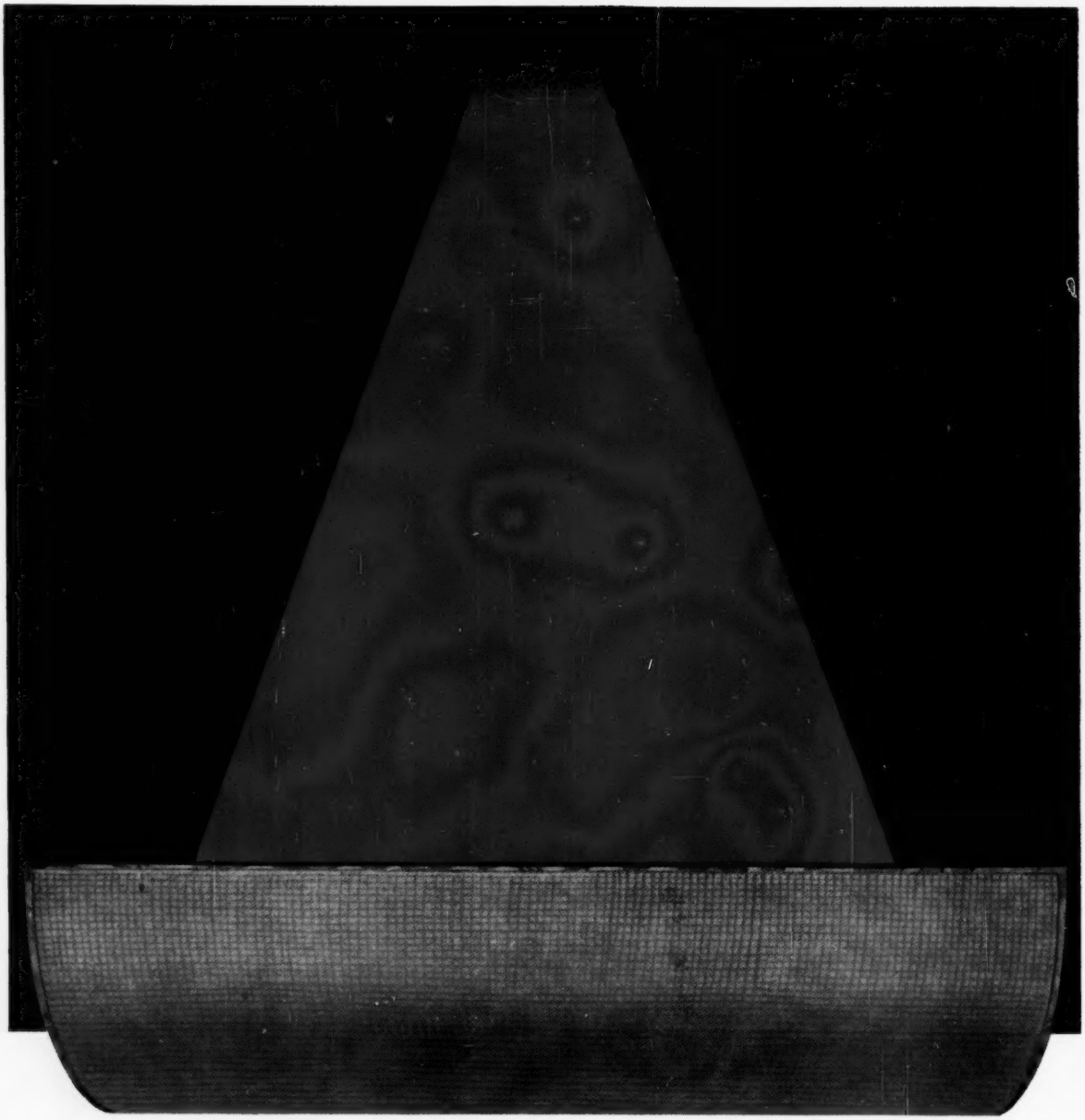

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Allied Chemical

Business
Newsletter

CHEMICAL WEEK
June 1, 1957

Selling syndets to consumers can be a rugged business for a firm without a broad consumer line. Last week, Monsanto turned over to Lever Bros. the job of marketing its All and Dishwasher All, retired to the less stormy chore of manufacturing them. Only a few weeks ago, Monsanto had declared its intentions of staying in the household syndet business.

For Lever, the new arrangement brings it a low-suds detergent with an established reputation. Its own effort in this line, Vim, a test-marketed-only product, was withdrawn some time ago when the firm decided to put its promotion efforts on the liquid syndet, Wisk.

For Monsanto's consumer product marketing group—established in 1952 to merchandise Krilium soil conditioners, the syndet All, and Rez wood finish—it means a substantial curtailment of activities. Lever has invited Monsanto personnel who have sold All to join the Lever staff.

•

Higher freight rates are coming. A few days from now, the Interstate Commerce Commission will hear final railroad arguments asking as much as a 17% increase to cover higher labor and equipment costs. ICC has granted an interim boost of 7% to Eastern roads, 5% to Western and Southern roads. The commission probably will grant a total raise of 15%, perhaps more to the Eastern roads. Rates charged by trucks and waterway operators are traditionally increased each time that rail rates go up.

•

Further expansion into chemical products looks like the next step from Texas Butadiene & Chemical Corp. The $30-million Channelview, Tex., firm, which dedicated its plant just last week, may diversify into solvents, alcohol, and synthetic rubber raw materials other than butadiene within five years, TBC's president, Eugene Green, Jr., said. Likely first moves: units for isomerization of butane and pentane.

•

Fire completely destroyed Demert & Dougherty's Chicago plant last Friday. Estimates place the loss to the household specialties maker and its aerosol-filling subsidiary, Aeropak, at $275,000.

•

Three vanadium producers are on trial again in Denver, facing monopoly charges brought by the U. S. government. Defendants are Union Carbide Corp., Vanadium Corp. of America, and Electro Metallurgical Co., a Carbide subsidiary. The first trial of the suit, last January, resulted in a hung jury (*CW, Feb. 9, p. 22*). The complaint, filed in 1948, took a long time in reaching trial because of the classified nature of some of the evidence.

Business
Newsletter
(Continued)

Antimonopoly laws in Canada were strengthened last week by a decision by the Dominion's supreme court. The court's decision says it is a violation of the Combines Act for a firm to make any agreement or arrangement with anyone else to prevent or lessen competition, even if it can be shown that the actions of the firms involved are not detrimental to the public. The decision is the outcome of an appeal by firms representing some 90% of Canada's fine-paper industry.

•

Olin Mathieson has a couple of new projects on the way. At West Monroe, La., OM has been granted a $3.5-million state property tax exemption for a paper and pulpwood plant. The unit will employ some 200.

Near Montville, Conn., OM's Nuclear Fuels Division has optioned a 200-acre tract as possible site for a plant for the assembly of nuclear reactor cores. The nuclear division, only 10 months in existence, now operates a pilot plant near New Haven, Conn., has several sites under consideration for its main reactor core assembly plant.

•

Hopes for production of elemental phosphorus at Vernal, Utah, got a boost last week, when San Francisco Chemical Co. (Montpelier, Idaho) revealed it has solved the beneficiation problems of using ore from the 700-million-ton deposit of phosphatic material. San Francisco, jointly owned by Stauffer Chemical and Mountain Copper, Ltd., still has one major hurdle, however—where to get sufficient electric power to operate its purification process.

Right now, the best energy source appears to be the power station at Flaming Gorge Dam, which is part of the Colorado River control system and which offers a variable power output, with a maximum of 80,000 kw. available. Stauffer says, "If low-cost power is available and if railroad facilities are made available, an elemental phosphorus plant would be advantageous to us." But it also says, "We have no plans at this time to construct a facility there."

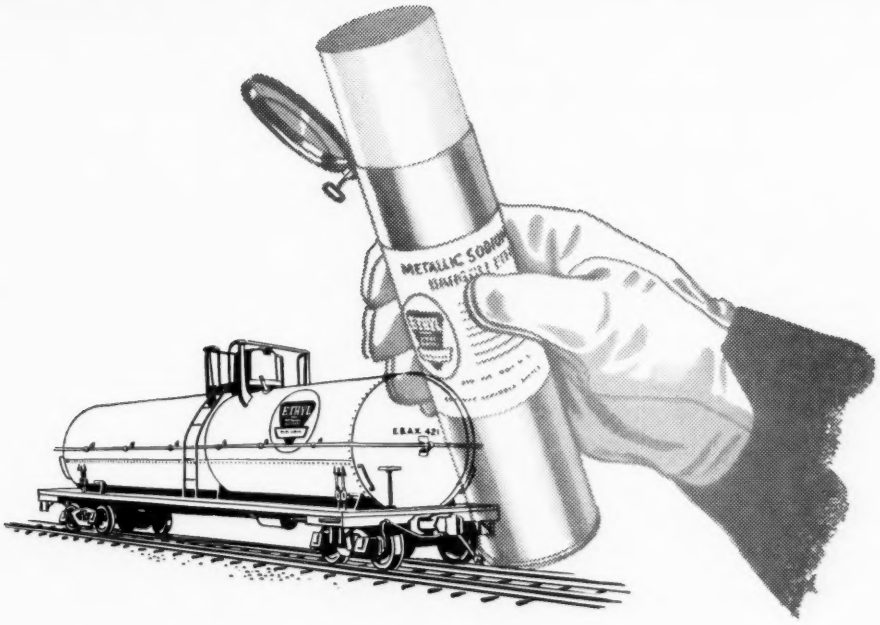
•

A long-lasting antiseptic plastic coating material has been introduced by White Chemical Co. (Bridgeport, Conn.). The semipermanent germicidal coating is dipped, sprayed or brushed onto telephone handsets, toilet seats, flush levers, tin can tops, and similar items. It can be applied to metal or plastic for about 8¢/sq. ft.

•

Psychiatrically oriented clergymen for mental hospitals? Smith, Kline & French has granted the National Academy of Religion and Mental Health (New York) $10,000 to provide fellowships to theological students who want to become chaplains in mental hospitals.

SODIUM metallic



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NaCl	.07% max.
Insoluble	Trace
Loss on ignition	Less than 0.1%
Solution	Clear
Color	White

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REP. CELLER:* His first law wasn't strong enough.

WIDE WORLD PHOTOS

REP. MILLER:* Keep the FTC out of it.

Squaring Off over Antimonopoly Bill

A new law putting corporate acquisitions under closer government regulation is slowly grinding through the legislative mills of Congress. Essentially an antimonopoly measure, the bill—which just last week got House Judiciary Committee approval—and will likely reach the House floor this session—requires 60 days' advance notice to the government of mergers involving corporations with a combined book-value exceeding $10 million.

The merger-minded chemical industry—which consummated some 55 combinations last year—has a particular interest in the proposed legislation. Estimates are that over 95% of the industry's mergers since 1948 would have been affected by the law, had it been in force. And chances are good that, should the bill pass, it would apply to a high percentage of future chemical mergers.

Unwelcome Proposal: Largely the effort of Rep. Emanuel Celler (D., N.Y.), the bill was first introduced last year. And, although chemical industry management (along with most of the business world) is opposed to it, the measure is making steady progress through Congress.

The House Antitrust Subcommittee and the Judiciary Committee, has altered the bill only slightly. But chances are, when it reaches the House floor, there will be a vigorous attempt at modification—led by Rep. William E. Miller (R., N.Y.).

Re-enforced Enforcement: Besides the provisions that 60-day notice be given, the proposed law gives both the Justice Dept. and the Federal Trade Commission authority to seek injunctions to halt mergers.

It provides, according to Celler, a way to tighten the 1950 antimerger law (also Celler's), which flatly forbids mergers or acquisitions of stock or assets that tend to substantially lessen competition or create a monopoly. This, says Celler, has lost its value because it hasn't been effectively enforced.

There are numerous exceptions to the bill now; there may be more after Miller has had his say for modification. He particularly wants to strike

*Emanuel Celler, Democrat, New York; William E. Miller, Republican, New York.

out the provision that gives FTC injunction authority.

Scrambled Assets: FTC, however, feels that because it now lacks the right to seek injunctions, it is seriously hampered in its antimonopoly moves. It can now file a case against a merger, hold hearings, and finally decide that the challenged merger does in fact violate the law—only to find it impossible to do anything to restore competitive conditions. By the time all these steps are taken, a merger has been consummated, assets have been scrambled, and it's almost impossible to unscramble them.

Prime example, FTC says, is its case against Crown Zellerbach. FTC filed the case in 1954, attacking CZ's buy of a West Coast competitor. Last March (*CW, March 16, p. 22*), an FTC hearing examiner upheld the charge and ordered sale of the acquired assets. And still to come: the full commission's ruling on CZ's appeal, possible Supreme Court rulings too. The job of carrying out any court-ordered divestment of assets after all this, which might take two more years, is difficult indeed.

'Just More Work': Major objection to the bill is that it will involve considerable extra work, fail to accomplish any really valuable antimonopoly action. Already, say chemical executives, bringing about a merger is a slow, costly job. It would be expensive to have a deal entirely arranged only to hang fire for two months. Reason: production, financial and legal data would all have to be brought up to date again just before the merger consummation.

There are some fears that word of the proposed mergers might leak out to speculators, despite the penalty for release of such information.

Other objections concern lack of specificity of the bill and amendments. These involve cases where (1) the 60-day wait can be waived (because of such factors as smallness of the companies involved, companies with 75% of value in undeveloped raw materials and, under certain conditions, foreign companies), (2) doubt as to what is relevant information, and (3) definition of what mergers would be allowed. But there's the feeling that the Administration is determined to strengthen its antimonopoly stand; and perhaps the Celler bill would not be the most severe of measures.

RADIOACTIVE LAB: For Kellogg, a bitter lesson, when . . .

Isotopes Get Out of Hand

Last week, M. W. Kellogg declined to contest the Atomic Energy Commission's suspension of two of its licenses to use radioactive iridium-192 in radiography equipment at the company's South Houston, Tex., plant.

Kellogg declined, according to James Carry, assistant to Kellogg's president, because it had already decided to suspend radiography operations at that plant. The decision, Carry said, had been in the works a long time, but unfortunately didn't come before the accident that caused Kellogg considerable trouble at Houston.

How It Started: The beginning of the difficulty was on March 13, when operators at Kellogg's radioisotope lab were preparing to open cans of radioactive iridium-192 pellets. The pellets were to be inserted in a Kel-Ray, a device for determining structural flaws in materials distributed from the company's South Houston tool and material storage area.

The radioactive material leaked onto the men's bodies, clothes and shoes. Although exact cause hasn't yet been determined, the pellets were either cut or had disintegrated.

Local supervisors failed for five days to report the incident to Kellogg management. By that time, the employees' clothing had contaminated their homes, though Kellogg did not consider the degree of contamination to be alarming. When the accident was finally reported, decontamination proceedings were instituted; but rumors and scare publicity had already started. By April 19, when Kellogg reported the incident to AEC, the publicity had become alarming.

But that wasn't all. Besides suspending the operations at the local lab, AEC lifted other Kellogg licenses, forcing the company to stop operations with such materials as cesium-137 and cobalt-60. It wasn't until last week that these licenses were partly restored.

Now, it appears, matters are settling. Tracerlab, Inc., has been working on decontamination of the lab. When this is completed, Kellogg will probably get a clean bill of health from AEC and the Texas health authorities. Meanwhile, public reaction at Houston seems to have returned to normal.

Nonetheless, just last week contamination was found to have leaked to other areas of the plant. The new discovery has prompted a check of all employees and vehicles connected with the installation.

The five-acre site, including a large metal building and some 10 smaller structures, plus 35 automobiles were being checked for radioactivity last week.

The latest incident of personnel contamination brings to nine the number of people affected at the site in the past 12 months. For Kellogg, it has proved a bitter lesson in the consequences of a mishap in the handling of radioactive materials.

BDSA Waits Verdict

Still reeling from a Senate-approved 33% budget cut, the Business & Defense Services Administration's 25 industry divisions this week are awaiting the outcome of a Senate-House conference to reconcile each chamber's version of what the budget should be.

Regardless of how much the committee decides finally for BDSA's appropriation for fiscal 1958, the Chemical & Rubber division, which serves chemical processors, is destined to be among those hardest hit.

Commerce Secretary Weeks originally asked for $7 million to run BDSA—$3.5 million of it to be used for the 25 industry divisions. The House voted to completely dissolve the divisions, and appropriated no money for them. Weeks then asked the Senate Appropriations Committee for $3.3 million for industrial-service branches. The committee approved $2.2 million—still 33% below the Administration's revised estimate.

Now the conference committee, made up of investigating members from both House and Senate, will try to agree on just what the appropriation will be. BDSA Director Horace McCoy is hoping it won't cut much off the Senate's figure, which now represents the most BDSA can hope for. But, Washington observers say something less is more likely.

Even if the Senate's $2.2-million figure does manage to withstand bombardment from members of the House committee, present plans call for a "skeletonizing" of the various industry divisions—each taking at least a 30% cut in both personnel and operating budgets. Layoff notices have already gone out to 100 employees.

If, on the other hand, still more is cut from the appropriation, McCoy says the divisions will "lose their identity" and will have to be combined.

In any case, the criteria that are used to determine who and how much will be cut are:

- The extent to which the department carries out direct operation and administration of defense procurement with preference given to AEC and Defense Dept. needs.
- How much the department is involved in other defense activities including analyzing and testing capabilities of industry to produce for mobilization, compiling of industrial-readiness data in case of an emergency.

Largest of the 25 divisions is Chemical & Rubber, headed by Hal G. Johnson. But, while C&R does have some priority in terms of defense procurement, it doesen't rank as high in this field as many other industry divisions. BDSA officials explain that electronics, metals and minerals, shipbuilding, communications equipment and the like will receive more consideration.

And, while C&R has an authorized staff of 41, it now employs only 38, having lost three men through recent retirements. Two of these openings are termed "essential" functions by C&R's division chief. And what's bothering BDSA officials is whether C&R will have to cut its staff by one-third of what it now has or one-third of what it's authorized to have—indications are that the former is the case.

WIDE WORLD

C&R'S JOHNSON: Retrenchment must come—but where?

If the vacancies are eliminated, C&R will have to drop all foreign production and marketing figures it now publishes as well as all data on the plastics industry.

And even the other domestic marketing information it now compiles, in view of the tight pinch on business services, will have a hard time surviving.

Imperfect Authority

Latest word on the concentration-in-industry report* now being checked over by the Senate Antitrust and Monopoly Subcommittee, comes from Jesse Friedman, the staff economist who prepared it. He recently outlined some of his ideas on the report's probable usefulness in a talk before businessmen in New York City.

Friedman's comment: the report "will not be the perfect instrument for professional analysis of industrial concentration [though] it will stand for a long time as the authority in that area." The report endeavors to fill an urgent need for information, but Friedman noted that it has disadvantages and shortcomings.

A basic one, he points out, is that those preparing the study had to rely on the 1954 Census of Manufactures. Imperfections in the census data itself and the industrial and product classifications' shortcomings for determining concentration make the report "something less than the perfect tool."

Also a disadvantage, Friedman says, is the nationwide pattern of the census statistics: they are not divided by regions. Since competition, or lack of it, is judged primarily by regional markets, this all-embracing pattern makes his report (based on nonregional material) difficult to apply to antitrust cases.

Still Best: Still, says Friedman, the report is the best information to date; and by developing comparisons between it and subsequent censuses and attempting to establish trends, regional concentration statistics could be prepared. Unfortunately, comparison between the current report and previous, inept concentration studies are fruitless, since there is little basis for comparison.

Friedman confirmed what a number of businessmen and trade organizations have been saying about the report: aside from the fact that the report is based primarily on old, diffuse, purely quantitative information, it lacks data on imports, which, Friedman acknowledges, play an important part in market patterns for many commodities.

What it all boils down to, agree most

*In which various commodities (including many chemicals) are examined individually. For each, the study purports to show what part of the total output is in the hands of the largest 50, 100, 150 and 200 companies.

observers, is that concentration studies will still require careful analysis on a case-by-case basis. But the Friedman report, when it does get an o.k. for use by Congress, will contain much fodder for political cannonfire and, as Friedman himself points out, Congressional interest in industrial concentration "is here to stay," with plenty of room for "continuing interest and study of such data."

U.S.S.R. Pools Plastics

One manifestation of Soviet Russia's recent redivision of production authority was last week's designation of East Germany as leader of a new effort to pool satellite plastics production.

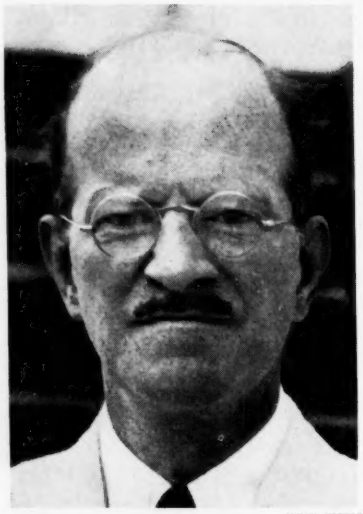
A new "Plastics Commission," which has been characterized as a nonvoluntary, multicountry, Soviet-inspired directorate of plastics production, has been formed.

The commission, operating under the control of COM-ECON (the Soviet-governed Council for Mutual Economic Assistance), is made up of the U.S.S.R. and all of its European satellites. The decision to pool production was made during a recent meeting of COM-ECON's synthetic materials meeting in Berlin.

Details of the decision:

- All know-how and production methods and formulas of the five most prominent plastics materials made in each of the countries will be studied by experts in the East German plastics industry. This information has already been pooled.
- The East Germans, after making the study, will work out resolutions aimed at creating the best possible uniform formulas and methods of manufacture.
- Plans will be devised whereby specific countries would produce specific plastics materials, not only for domestic use but also to supply all other countries.

Basically, this decision to pool indicates that eventually the entire East European bloc of nations will have a limited number of standardized plastics materials, produced by one or more countries for all other bloc-member countries. The requirements of domestic economies in the various member countries is entirely disregarded in this new "satellite uniting" move.



WIDE WORLD

JUDGE MEANY: Don't seek a patent if you've sold your idea.

Pitfalls of Patent Delay

A court ruling handed down in Philadelphia last week is a strong warning to chemical firms to refrain from selling new products, even those made experimentally, before they've applied for patents.

The ruling, handed down unanimously by a three-judge panel in U.S. Circuit Court of Appeals, was in answer to an appeal by U.S. Chemical Corp. and U.S. Plastic Products Corp. (both of Metuchen, N.J.). They had sued Plastic Glass Corp. (Newark, N.J.), charging patent infringement.

The patent, issued in 1954 to its inventor and assigned by him to U. S. Chemical, covered a process for casting patterned plastic sheets to produce a mother-of-pearl effect.

The appeals court decision upheld a previous ruling by Federal District Judge Thomas Meaney in Newark that U. S. Chemical's patent was void simply because U. S. Chemical and U. S. Plastic, its exclusive licensee, had put the idea into "public use" before applying for a patent.

U. S. Plastic had conceded that prior to application for the patent in 1953, it had manufactured and sold 665 sheets of the plastic, but insisted these sales were merely experimental to "determine production controls necessary for successful commercialization." The court decided that to provide protection under such circumstances would lead to an "unwarranted extension of the patent monopoly."

Settling a Mine Hassle

A hassle over land subsidence above salt mines prompted the Michigan legislature last week to set up a special committee to study hydraulic salt-mining. The legislature says that it has no source of unbiased information on this subject.

The problems arise out of a dispute between Allied Chemical and the Detroit Edison Co. The latter claims that Allied's salt-mining operations on Zug Island in the Detroit River are undermining one of its power plants.

An attempt was made to settle the dispute with a bill in the state legislature, but that failed. The bill, which would have favored Edison, was opposed not only by Allied but also by Dow, Wyandotte, Morton Salt Co. and other mining companies. Opponents said the bill would have changed the concept of the existing state law by instituting "liability without fault." Under this principle, the mere fact that a company was mining would be prima facie evidence of a liability for subsidence.

The bill's opponents claimed that a previous Michigan statute and injunctions obtainable under common law already provide adequate remedy.

They also argued that, if the doctrine of "liability without fault" were to be imposed on salt companies, it also should be imposed on other mining operations—particularly iron and copper mining, important in northern Michigan.

Testimony was given to show that Detroit Edison had purchased its property with full knowledge that hydraulic mining was in progress under adjoining lands.

Detroit Edison says that when it bought its property it had been assured by Allied that there was no danger, but has now become alarmed because of other subsidences across the Detroit river in Ontario and on Zug Island.

The electric firm says that Allied's "liability without fault" talk is meaningless, calls it "a theatrical phrase used to sway the legislature." No legal relief is now available to it, says Detroit Edison, and the proposed law is needed to prevent disaster. Says Detroit Edison lawyer Harvey Fischer: "The total assets of Allied, even disregarding liabilities, wouldn't be enough to pay for the damage."

COMPANIES

H. K. Porter Inc. this week will ask stockholders to approve an increase in authorized shares to 250,000 from the present 125,000 shares. Stockholders will also vote on a proposed 10% stock dividend.

•

American-Marietta Co. is considering a 3-for-2 stock split if earnings warrant an increase in dividend payments later in the year. At present, however, plans are to raise the quarterly dividend from 30¢ to 35¢ per common share; if the stock is split, the quarterly rate will be reduced to 25¢.

•

Pittsburgh Metallurgical Co., Inc. (Niagara Falls, N.Y.) directors have proposed a 2-for-1 stock split, subject to stockholders' approval at a special meeting, June 26. Under the proposal, authorized common stock would be increased from 1 million to 2 million shares of $1.25 par value.

EXPANSION

Lithium: Montgary Explorations Ltd. (Toronto) will begin producing both ceramic and chemical grades of lithium ore at its Bernic Lake (Manitoba) ore body. Preliminary work has shown that 11.4% of the ore will be in the form of a chemical grade assaying 5.4% Li_2O. The ceramic grade, assaying 5.6% Li_2O, will make up 21.3% of the total ore processed.

Tests have shown that high-grade feldspar equal to 18.7% of the weight of the ore, and high-grade quartz equal to 27.8% of the total weight can also be produced.

Stockpiling will begin this month pending construction of a flotation concentrator. A magnetic separation process will be used.

•

Resins: Allied Chemical & Dye's Barrett Division will "more than double" the capacity of its melamine and urea plastic molding compounds plant in Toledo. Upon completion in mid-1959, the plant will be the largest in the U.S.—according to Allied—producing thermosetting resins. Reported cost of the expansion: $10 million.

•

Adhesives: B. F. Goodrich is blueprinting a $2.5-million plant in Akron to manufacture adhesives. Construction will get under way this summer with completion scheduled for mid-1958.

•

Potash: Potash Co. of America this week will start construction of its $20-million mining project near Saskatoon, Can. New installations scheduled for completion early in 1958 include a potash concentrator and a surface plant. Chief contractor is Stearns-Roger Engineering Co. Ltd. (Calgary).

Vinylidine Chloride: W. R. Grace is building a $1-million addition to its Cryovac Co. division's cryovac (vinylidine chloride film) plant at Simpsonville, S.C. The new addition will more than double the present bag capacity.

FOREIGN

Polystyrene/Poland: Poland has awarded a $960,000 contract to the English firm Petrocarbon Developments for design of a large-scale polystyrene plant. The new plant will incorporate the latest operating experiences of the Shell Chemical associate, Styrene Products. Petrocarbon engineered the process for Styrene Products.

•

Nitrogen/Austria: The Hitler-built nitrogen works of Linz, now nationalized, had 1956 sales of $34 million, up from '55's $30 million. Pesticide sales increased 200%; humus fertilizer, by 53%; pharmaceuticals, by 36%; chemicals and adhesives, each by 26%; nitrogenous fertilizer, by 12%. Exports took 429,000 metric tons of nitrogenous fertilizer, Europe taking 52.5% (up from '55's 48.5%); Asia, 33.1% (up from 13.9% due to a deal with Red China); Africa, 13.1% (down from 34.5%); the U.S., 1.3% (down from 3.1%).

•

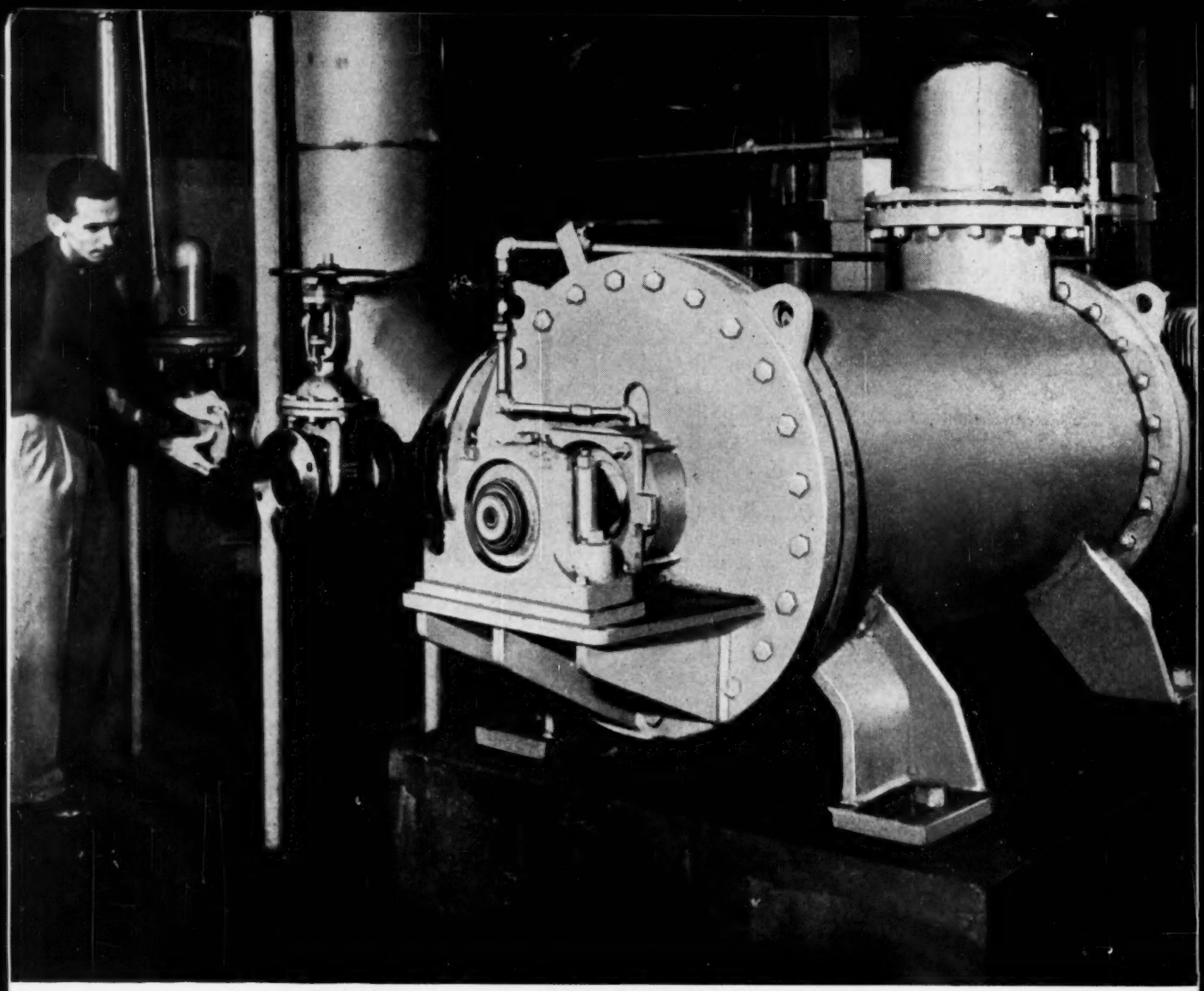
Sugar/Romania: The Chemical State Institute of Jassy claims to have a method of increasing the extraction of sugar from sugar beets. Ion exchangers made from coal and artificial resins are used; according to Romanian reports, they bring out almost all of the 50% sugar content in sugar beet molasses. Also brought out: pectin, betain, glutamine acid, other by-products.

•

National Carbon/India: Despite financial stringency, import restrictions and increased governmental control, the Calcutta-based National Carbon Co. Ltd. made a higher net profit in 1956 ($1.9 million) than in 1955 ($1.8 million). Union Carbide remains the majority stockholder, although 40% of the shares were offered to the Indian public last year. Two expansion programs are under way: a plant for flashlight case manufacture and one to make polyethylene.

•

Synthetic Rubber/United Kingdom: The new plant of the International Synthetic Rubber Co., now under construction at Hythe, Hampshire, will represent an investment of some $8.4 million by the end of this year. Upon completion late in 1958, it is expected to produce 50,000 tons annually. Firms that joined to form ISR include Dunlop Rubber, Avon India, Michelin Tire and the British subsidiaries of Goodyear and Firestone.



Chlorine dioxide mixer in service at the Carolina Division of Riegel Paper Corp. The unit was manufactured by Improved Machinery Inc. It is lined with ⅛" Rem-Cru A-70 titanium sheet.

Titanium liner gives low-cost protection to a conventional metal

Even a small amount of titanium can protect an entire unit from corrosion damage. Here's an example...

Highly corrosive chlorine dioxide would quickly ruin the conventional material in the mixer shown above. So, titanium, virtually immune to such attack, was used to form a protective liner. Sheets of ⅛" thick Rem-Cru titanium were welded together and formed into a cylinder, which was "rolled in" to fit the mixer shell tightly. A full year's trouble-free service again shows titanium to be the least expensive metal in terms of service life.

Titanium has many other advantages. It's as strong as steel, for example, yet 44% lighter. And it's a practical way to extend service life by as much as 10, 20, even 50 times. Why not let a qualified Rem-Cru engineer help you work out specific applications.

REM-CRU TITANIUM

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Write Dept. CW-6 for the Rem-Cru Review—a free periodical presenting the latest data on titanium.

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Washington
Newsletter

CHEMICAL WEEK
June 1, 1957

The "full return" alien property bill is dead—at least for this session of Congress. And the bill that would postpone indefinitely the government's proposed sale of a controlling interest in General Aniline & Film Corp. is also in limbo.

The bill that would return former enemy-owned assets or an equivalent value to previous owners is scheduled to come up for Senate Judiciary Committee consideration this year—but only after the group takes up the even more controversial civil rights bill. And since the proposed sale of GAF stock has been postponed by Attorney General Herbert Brownell, there's little pressure for Senate passage of the bill that would have forced the sale's postponement. Even if the Senate were to complete action on either bill, it would have to be considered by the House (where there's been no enthusiasm whatever for alien property return) and be signed by President Eisenhower (which many people feel is unlikely) before it could become law.

Further complicating the situation is the annual report of I. G. Farbenindustrie-in-Liquidation, circulated in Washington last week. The report points out that Farben-in-Liquidation is "directly interested" in the full-return bill. Though Farben emphasizes that only some $6 million in license fees and $3 million in a credit balance is involved, the report is sure to be tied to the efforts of the Swiss firm Interhandel to regain control of GAF on grounds that it had no German "taint."

One additional factor to be considered is the current Washington visit of German Chancellor Konrad Adenauer. In a previous visit, Adenauer asked for concessions on the Administration's alien property stand. His plea was turned down then, may be rejected again.

•

Another antibiotics study has been begun by the Federal Trade Commission. Last year, the commission asked about investments, plant equipment, national defense construction, purchases of antibiotics for resale, employee classifications, and patent licensing. This year, the commission wants to learn more details about sales and pricing policies.

On an immediate basis, the commission can't do much more than make a report on the pattern of distribution. But the survey may provide ammunition for Congressional committees looking into the patent implications of the high cost of drugs.

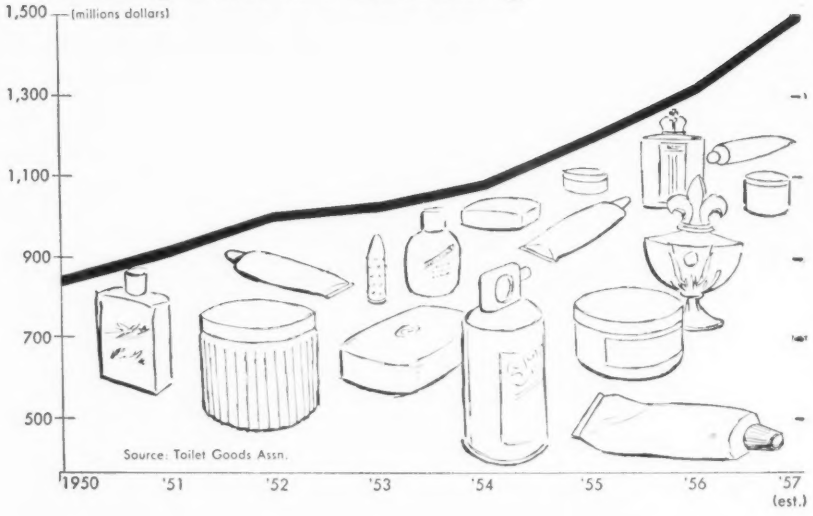
•

Rules to limit penicillin in milk, set by the Food & Drug Administration, won't be changed. Despite industry pleas, FDA is sticking by its recommended 100,000-unit limit for mastitis remedies for cattle. The worry is that when more than that size dose is used it leaves dangerous residues in the milk. FDA, however, has turned down a suggestion that sale of antibiotic mastitis drugs be limited to prescription, and a proposal that dye be added to the penicillin remedy to check on residual traces in milk.

Charting Business

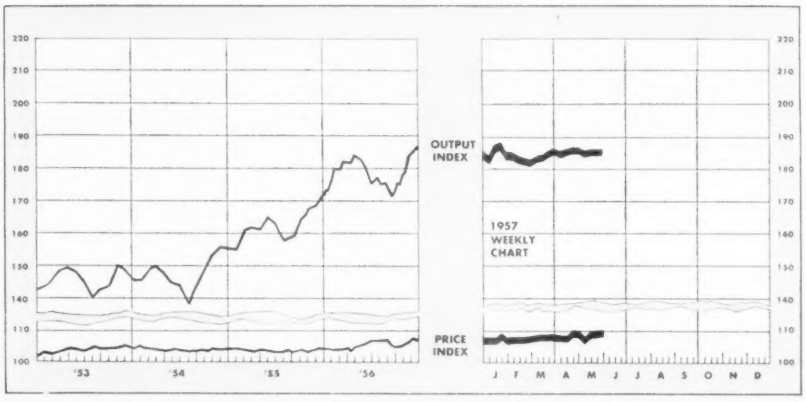
CHEMICAL WEEK
June 1, 1957

Toiletry Sales Are Flourishing



Specialties on the Upswing

FOOD STORES, as well as independent and chain drugstores, are finding that toiletry items are profitable ones. Reason: toilet goods sales last year hit a record high of $1.3 billion, nearly 11% more than in '55. Dentifrices sales jumped 10.5%; shaving preparations, 9%; cosmetics, 14%; deodorants, 20%; hair preparations, 12.5%. This year, sales may pass $1.5 billion.



Business Indicators

WEEKLY	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	186.7	186.6	180.3
Chemical Week wholesale price index (1947=100)	110.1	110.1	105.8
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	45.40	45.49	46.81

MONTHLY Wholesale Prices (Index 1947-1949=100)	Latest Month	Preceding Month	Year Ago
All commodities (other than farm and foods)	125.3	125.4	121.6
Chemicals and allied products	109.1	108.8	106.9
Industrial chemicals	123.6	122.9	120.9

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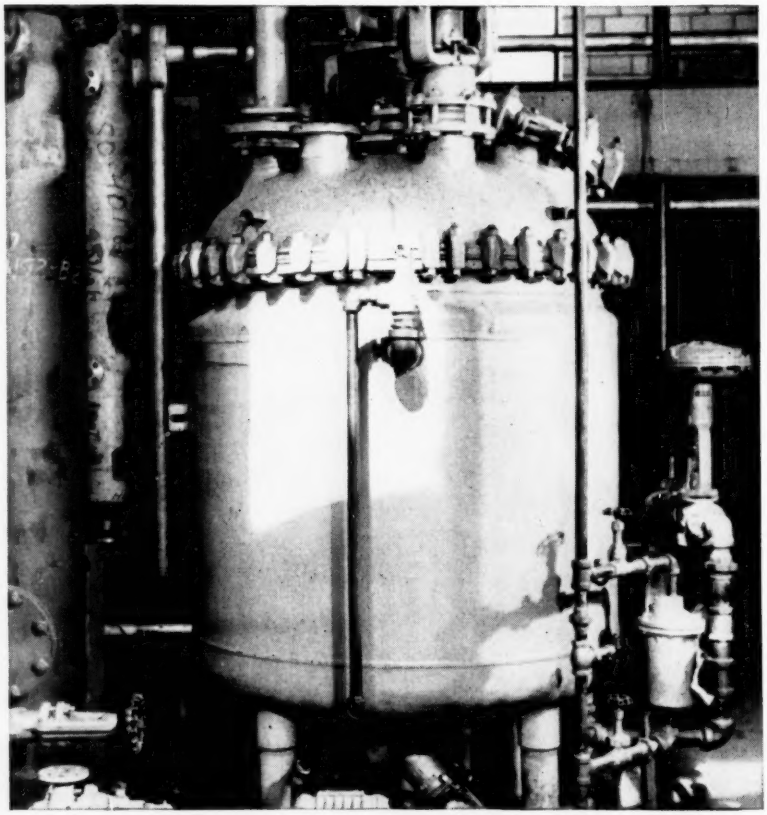
Pfaudler

Pfaudler Corrosioneering News Published by The Pfaudler Co., Rochester, N.Y.



How Sherwin-Williams makes 1 reactor live the life of 12

To make the dye "Alkali Blue," the Sherwin-Williams Company has to handle hot, corrosive acids and harsh, abrasive precipitates.

These materials quickly eat their way through ordinary reactors—one through corrosion, one through erosion.

Sherwin-Williams used to employ cast iron kettles which lasted from six to eight months.

Then, eight years ago, they installed three Pfaudler glassed steel reactors. Those reactors are still giving full-time duty.

The original three Pfaudler reactors have already lived the life of 36 of the ordinary cast iron reactors —*and they're still in service.*

Glassed steel now standard

Their success with the reactors soon led Sherwin-Williams to specify Pfaudler glassed steel whenever they process flammable, volatile, corrosive chemicals.

For example, intermediates for cresol are made in three 200-gallon Pfaudler reactors and an eight-section cooler. 98% concentrated sulfuric acid and toluene course through this equipment day after day without a trace of corrosion or product contamination (glass has no catalytic or direct reaction with most chemicals).

Then, a 10,000-gallon Pfaudler glassed steel storage tank collects waste sulfuric acid at 50% concentration for reclamation.

From lab to pilot plant to production

Sherwin-Williams reports as still another advantage of Pfaudler glassed steel equipment. Because of the unusually wide line of stock standards Pfaudler carries, it's possible to use essentially the same type of equipment for a product from laboratory to pilot plant and on to full-scale production.

For more information on this line of glassed steel equipment for corrosive service, check the coupon for a copy of Bulletin 936.

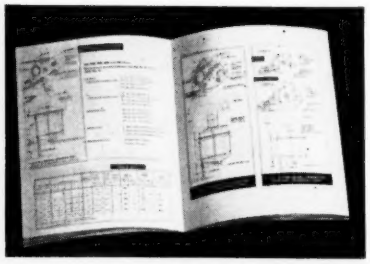
Standard stainless steel reactors described in new bulletin

We've prepared a new bulletin which discusses how you can use standard stainless steel reactors in the lab, in pilot plant, and in full-scale production.

The bulletin covers sizes ranging from 5 to 2000 gallons.

Detailed diagrams and specifications of designs cover heavy-duty drives, engineered agitation systems, rotary seals and stuffing boxes, baffles, thermometer wells, and dip pipes in a range of sizes to match each vessel.

Of the numerous types of stainless steel available, Pfaudler has standardized on Types 304, 316, 321, and 347 as offering the best all-around corrosion resistance for general process equipment. The extra low carbon grades plus full annealing of all grades, are also available, broadening the range of Pfaudler reactors for severe chemical service.



All told, there are sixteen pages of useful information in this Bulletin Number 944. If you work with reactors, it should prove an indispensable part of your file. Check the coupon for a copy.

Corrosioneering News

Quick facts about the services and equipment available to help you reduce corrosion and processing costs.

Pfaudler metals now run from "A"* to Zirconium

We feel that glassed steel is usually your most economical choice for corrosive service. There are applications, however, where glassed steel is not your best buy —so we maintain an arsenal of metals and alloys which you can also use where you encounter specific types of corrosion.

The latest addition to this arsenal is zirconium—a metal which has outstanding resistance to selected corrosive environments.

We've been working with zirconium for some time now, studying its virtues and its idiosyncrasies. From these studies we've acquired the experience needed to design and fabricate equipment of zirconium.

You may have seen an example of our fabrication ability at the International Atomic Exhibition where we displayed a two-gallon kettle made entirely of this metal.

With zirconium as well as glassed steel and such metals and alloys as Herculoy*, Everdur, titanium, copper, nickel, Inconel, clad materials, and stainless steel, Pfaudler offers you an impartial selection of the best material for use in your processing.

*Herculoy—a silicon-bronze alloy "A."

CORROSION GUARANTEE

For one year after shipment, Pfaudler glassed steel equipment is guaranteed "not to become unserviceable as a result of corrosion" in terms of the operating conditions agreed upon at the time of purchase, or Pfaudler will repair or replace at no cost to the user.

Get a full year's guarantee against corrosion

Whenever you put a new piece of Pfaudler glassed steel equipment into use, you can have twelve months of *guaranteed* service.

If chemical attack should make your equipment unuseable during this first year under the operating conditions specified in the guarantee, we will repair or replace it without charge.

This guarantee is but one measure of the ability of Pfaudler glass to fight corrosion.

This glass is resistant to all acids except hydrofluoric, even when they're hot. It also withstands the corrosive action of all alkalies up to pH 12 up to 212° F.

The guarantee applies to all glassed steel used for reactions, fractionation, absorption, stripping, extraction, solvent recovery, etc.

14th Seminar on Corrosion counted a success

At right you see the agenda for the first of six discussion meetings of the 14th Pfaudler Seminar on Corrosion-Resisting Process Equipment which was held early in April.

These Seminars are typical of the out-of-the-ordinary services rendered to Pfaudler customers.

9:15 Technology of Glassed Steel
George Warren,
Ceramic Engineer

9:45 Research in Glassed Steel
Gordon P. K. Chu,
Research Engineer

10:30 The Corrosion Resistance of Glass
D. K. Priest,
Research Engineer

11:00 Designing Glassed Steel Equipment—R. H. Starrett, *Chief Engineer, Elyria Division*

11:40 Glassed Steel—The Production Process—G. A. Bachers, *Production Manager, Rochester Division*

As you can see from the agenda, discussion at the Seminar is centered around the use of glassed steel in combating corrosion. Other topics covered were stainless steel and alloys, ranging from pure technology to fabrication, to maintenance, to operation.

The participants also made tours of the Pfaudler plants and laboratories and took part in group discussions.

Certain of the design features you now enjoy on Pfaudler equipment germinated at one of these Seminars. We are in hopes that the one just completed will bring still further improvements in the "tools" available to you for the fight against corrosion.

For further information on the Seminar program, contact your Pfaudler representative.

THE PFAUDLER CO., DEPT. CW-67, ROCHESTER 3, N. Y.

Please send me:

☐ "Buyer's Guide to PFAUDLER Corrosion-Resistant Process Equipment," Bulletin 936 ☐ "PFAUDLER Stainless Steel Reactors," Bulletin 944.

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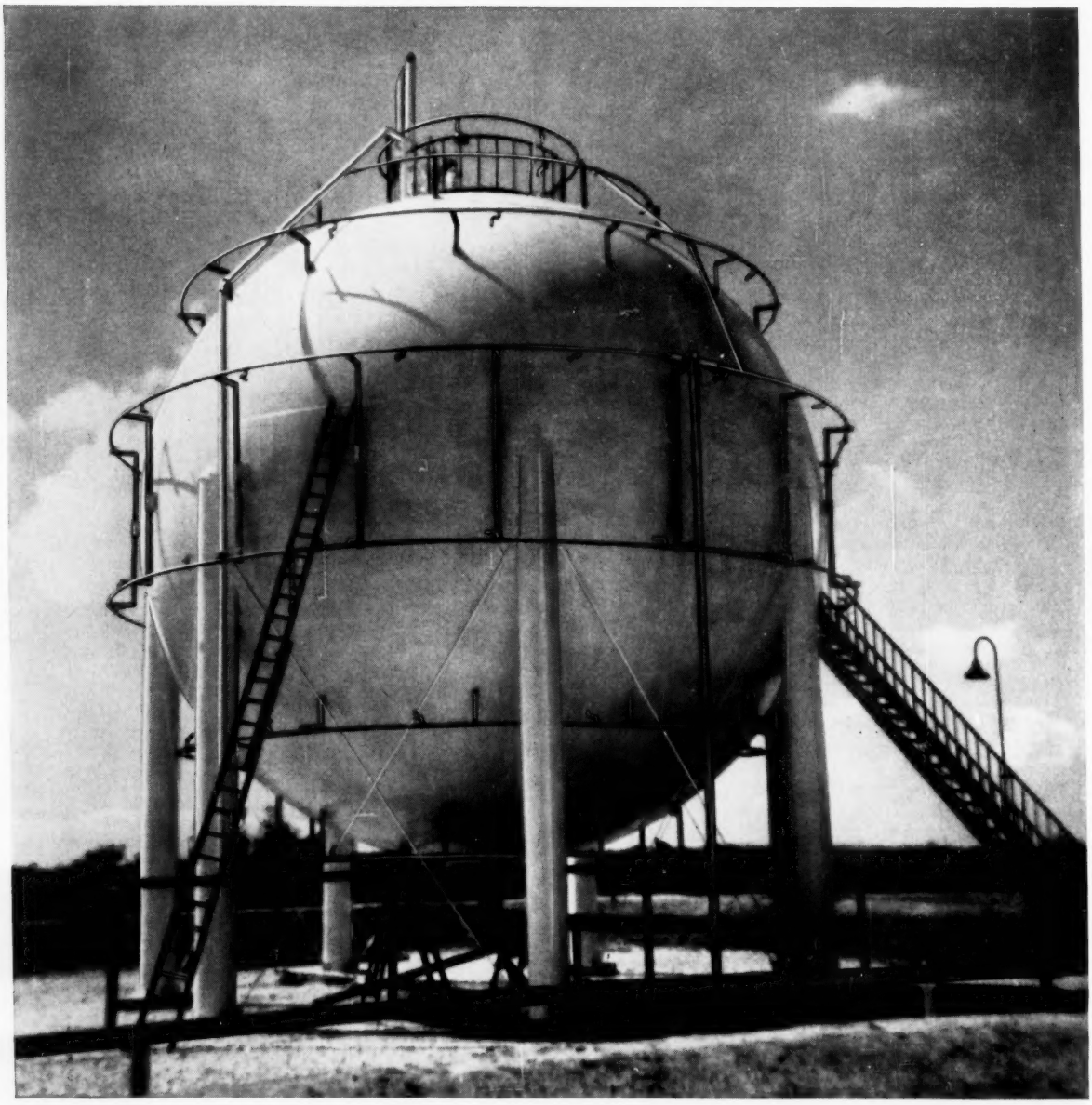
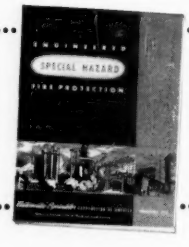


"Automatic" Fire-Fog System protects new Firestone Butadiene Plant against fire

A major step in Firestone's giant expansion program is the modern Butadiene plant engineered and constructed at Orange, Texas, by the Catalytic Construction Company.

Spherical vessels like the one pictured here–holding flammable liquids under pressure – are protected with an "Automatic" Fire-Fog System. They are a part of the vast processing operation which supplies raw material for the production of FR-S, Firestone's new high-quality synthetic rubber.

Through research and development "Automatic" Sprinkler has kept pace with the fire hazards of modern industry. As the leader in this field "Automatic" Sprinkler was responsible for the design, engineering and installation of the fire protection system in this multi-million dollar facility.



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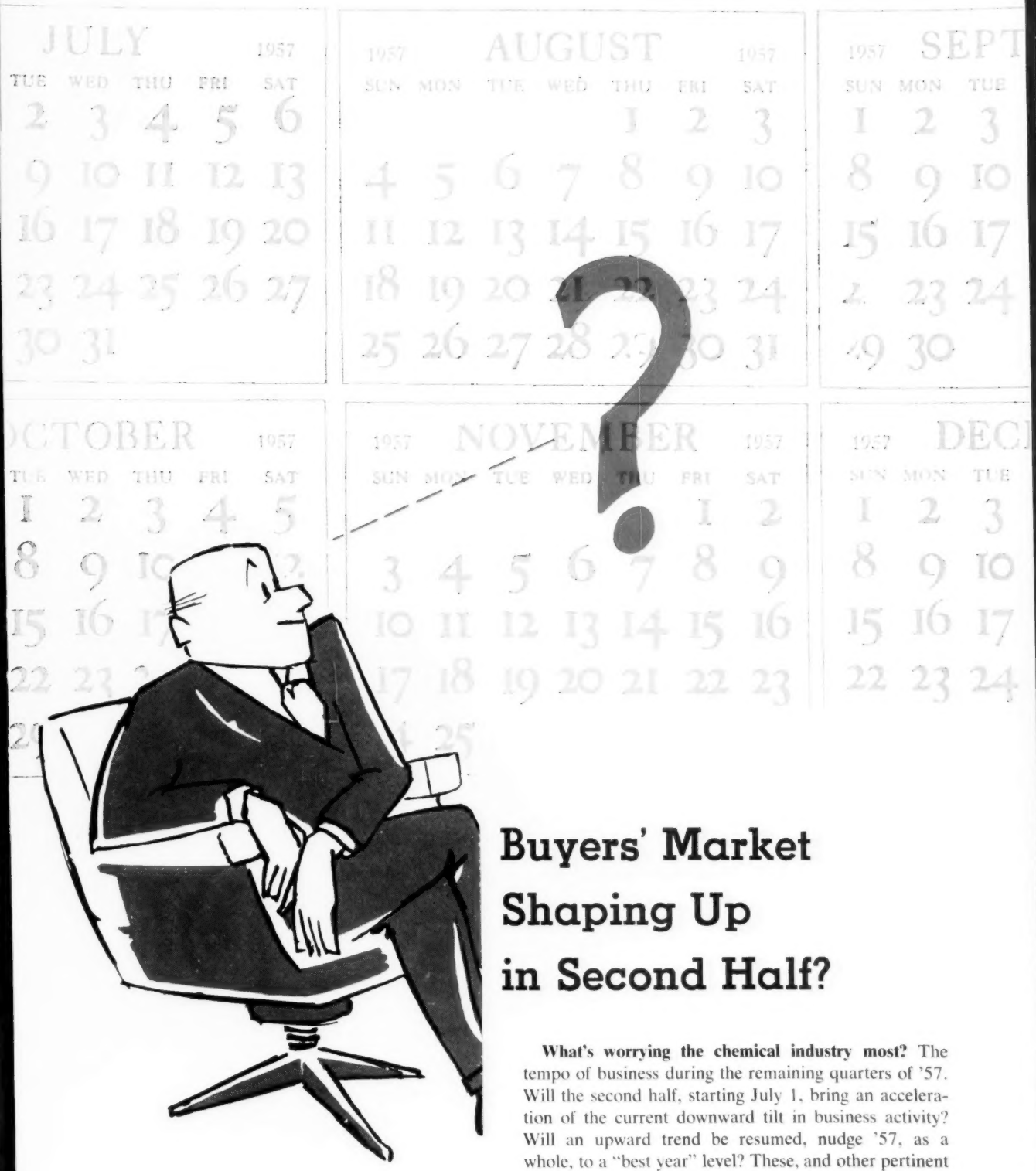

Buyers' Market Shaping Up in Second Half?

What's worrying the chemical industry most? The tempo of business during the remaining quarters of '57. Will the second half, starting July 1, bring an acceleration of the current downward tilt in business activity? Will an upward trend be resumed, nudge '57, as a whole, to a "best year" level? These, and other pertinent questions are answered in a just-completed nationwide canvass of chemical purchasing agents, sales managers,

Outlook consensus: '57 sales will be slightly higher than those of '56; profit margins will widen. There'll be additional price increases, but, on the whole, chemical price curves should soon level.

market, other executives, and government economists.

One conclusion, noteworthy because of its consistent appearance in most area reports, is this: the year will not wind up as bad as some pessimistic forecasts now indicate. Sales will register a modest 5-7% gain over '56; chemical consumers will have few, if any, shortage worries; narrowed profit margins, reason for the slew of price increases since early last fall, will improve, albeit moderately. But by and large, it's a buyers' market shaping up.

"We have seen price increases on every raw material we buy. And no end is in sight." *Consumer*

Criss-crossing the Country: Here in detail is the present—and near future—state of the nation's chemical markets as indicated in reports funneling in from all points to *CW*'s New York headquarters:

West

Consensus on the West Coast—from Oregon to California—though perhaps generally more optimistic, nonetheless sets the tenor for all areas of the country. Enthusiastic predictions for the industry envision an over-all increase in sales volume for '57, at more than 10% above last year. That's on par, incidentally, with the percentage gain racked up in '56 over the previous year.

Few chemical marketers in the West expect to post higher prices during the last half of the year, and even fewer expect prices to drop significantly. Although prices have been trending upward for months, some see a leveling in sight. Price-cutting tactics will not be in evidence.

Unlike most every other section of the country, polyethylene sales are doing "quite well." Some new producers who came in during the past year were worried, but enough new polyethylene customers are showing up to negate surplus problems.

Fact is, the West doesn't seem to have any oversupply problems serious enough to warrant even talk of production cutbacks. General chemical demand, reports one major seller, is "excellent," and there are more signs of occasional tightness than overages. Another comment: business will be more competitive, but good.

On the other hand, while some prognosticators describe the chemical business outlook as "encouraging" for their area, they do point out some likely dark spots in the local picture. The plywood industry, one of the biggest chemical customers on the West Coast, is cutting back some because of overproduction. This will affect items such as formaldehyde, resins, adhesives, phenol, among others.

Cut in new housing starts has reduced one lush market for paint materials. (Industrial paint accounts are taking more, however, and so are do-it-yourselfers.)

Another top company executive is pessimistic about prices; can't see why the upward trend of chemical prices should reverse itself. And another firm complains that it has been handed at least one price increase on every raw material it buys, and in some cases, two increases. . . . "More are being posted all the time, and there's apparently no end in sight."

There's some talk on the West Coast of "buyers' resistance," and such balking will become more pronounced in the next half year. But opposing the price resistance, say marketers, is the pressure of financial statements showing profits going down. The conflict may add up to many more increases—but chances are that a lot of them won't stick.

Here are some reports on specific West Coast commodities: methanol may be in tighter supply . . . phenol in good supply now, may also tighten . . . sulfuric acid prices will likely remain firm, although supply is overample. Many companies, especially fertilizer producers,

"We can't get away with more price hikes while there's excess capacity." *Producer*

Also in sight: no shortage worries for chemical consumers; output will be trimmed by some producers. For most commodities though, "in balance" describes upcoming supply/demand conditions.

are beginning to make their own acid; this has hurt sales . . . ethyl alcohol, in balance . . . chlorine is in good shape market- and pricewise . . . soda ash, firm.

Formaldehyde capacity exceeds demand, but there's no price-cut talk. Phthalic anhydride is about the only item causing real production worries. Says one maker: too many producers of phthalic out here, but no one is going to resort to price slashing. It's another story on ammonia; industry is "overbuilt—there's about twice as much capacity as we'll need for some time to come."

Slightly east, in the Intermountain area, fertilizers are also generating a lot of attention. Prices on most fertilizers are expected to firm up further in the second half—but it'll be a very slow movement upward. Phosphates' outlook is bright. So is ammonium nitrate's.

Of late, there's been a lot of price cutting going on, and these include using "gimmicks" such as "extension of long-term credit terms," but this has stopped or will stop. One factor that will contribute to fertilizer price hikes: higher manufacturing costs, including wages at mines and reduction plants, freight, selling costs.

Southwest and Gulf Coast

The busy Southwest and Gulf Coast has similar problems—and hopes—and both seem more acute than in the West. Volume of sales will increase during the third and fourth quarters to push level of '57 business even with or slightly higher than '56's. Net income (profits), however, will be smaller. Few observers expect sales, in this area at least, to break any records. One reason, other than the familiar "higher manufacturing costs," that may bring about additional price hikes, was summed up by a Texas chemical producer: prices must be raised to meet stockholders' demands for dividends. Another marketer takes an opposite tack, insists that there can't be many more price increases because the "chemical economy must take up the slack created by new plants and expansions . . . we simply can't get away with more price hikes while there's excess production capacity" overhanging the market.

But don't look for many price cuts either. Most marketers are convinced that slashing prices doesn't sell an extra pound of material. The alternative? Production cutbacks in the next half of the year. It's a new, worrisome problem for the usually bustling Gulf Coast-Southwest section. Ammonia, polyethylene, rayon have been reined in, and further cuts in production schedules are likely. (Polyethylene, though overproduced, will not spawn a market glut; prices may come down, however.) Ammonia expansions have come to a halt. New sulfuric acid plants in the area have upped total capacity, caused some leveling off in production among producers. And sulfuric has lost out some in the Southwest because of the drop in demand for ammonium sulfate. With rayon down, caustic soda has suffered—it's more than plentiful in this section, but that "doesn't mean it'll be running out of anybody's ears." Phenol is also

"Chances are good that phthalic anhydride—and napthalene—will catch up with demand sometime next year." *Eastern marketer*

in "excess supply," but not enough to break the market.

But chlorine is "rocking along" and will continue to do well through the rest of the year. Why? Increasing demand from pulp and paper mills. Soda ash outlook (for the second half of '57) is "much better," while perchlorethylene and trichlorethylene use is also expanding. Increasing chlorinated hydrocarbon production has induced—and will continue to induce—oversupply of by-product muriatic; demand for the latter hasn't kept up with the increase in output.

Vinyl resins production will be upped. Sidelight: another new vinyl floor tile plant is soon expected to begin production on the Gulf Coast; an established manufacturer has expanded his plant. Result: Eastern vinyl floor tile makers who have been serving the area may have to kiss off that market. Freight costs will make it tough to compete with tiles produced on the Gulf Coast.

The word "glut" is used sparingly in Southwest markets, but trade observers aren't adverse to hanging a

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"more-than-ample" label on many chemicals: ammonia, ammonium sulfate, urea. These fertilizer materials—and insecticides—may firm up, though, because of the recent wet weather. On the whole, shortages are practically nonexistent, and this condition will probably prevail through '57 and '58.

Midwest

Further east, in the nation's broad Midwestern belt, the theme of plenty is also evident. The over-all outlook, however, more closely parallels the optimism of the Far West than of the Southwest.

Most trade analysts expect that business in the latter half of the year will push '57 sales some 10-12% ahead of last year. Many companies report that level of current quarter business is on the upswing, and although there may be some faltering in the third quarter, the final three months will set a high, firm platform for further increases next year.

Profits are another picture—slightly out of focus. Production costs are expected to continue inching up. Profit-cost squeezes may hurt enough to override producers' reluctance—and likely consumer complaints—to additional price increases. Again it's either that or, as a major chemical seller tells *CW*, "We may produce only enough to fill demand of our customers." In other words, the production cutback alternative heard in other sections of the country is also getting serious consideration in the Midwest.

The explanation, of course, is that prices can remain steady if output is geared to demand, rather than allowed to run far in excess of consumers' requirements. Bugaboo of the latter course: inventory backups at the producers' level.

Generally speaking, supply/demand prospects on most commodities in the area are "very good" for the remainder of '57. A few items (polyethylene, some alkalis, some acids) are pacing demand; there's an overabundance, too, of ammonia. (The latter may not take an actual price cut when sold near producing plants, but when shipped out, producers will increasingly foot the freight costs, which in effect, is a price reduction to users.)

In the Midwest, as in other sections, fertilizers will continue to give trouble. Sales are dropping, and weather, plus

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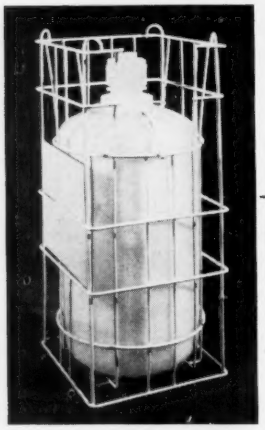

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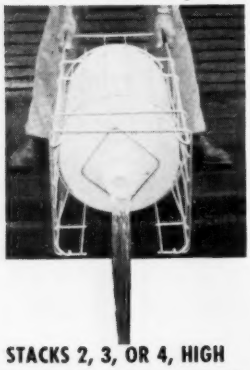

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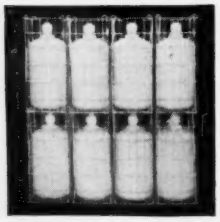

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declining income of farmers, isn't helping much. These factors will probably preclude price lifting. The fertilizer and other ag chemical prospects can be summed up easily—supply good, demand poor.

Benzene, resins, alcohol, phosphates, and phosphoric acid are all doing fairly well; no general oversupply is anticipated, nor any tightness. Look for a possible price increase on some phosphates—producers are hesitant but may make the move soon.

Industrial East

Opinion on prices varied, in the highly industrialized area wheel-spoked around Pittsburgh, on just where prices are going in the next six months. But the tenor of comments is typified in one report: "Number of price increases will taper off, establish a fairly stable price index curve within the next few weeks. But over the long run, rising costs of living will boost freight and labor costs, forcing a slow rise in chemical prices."

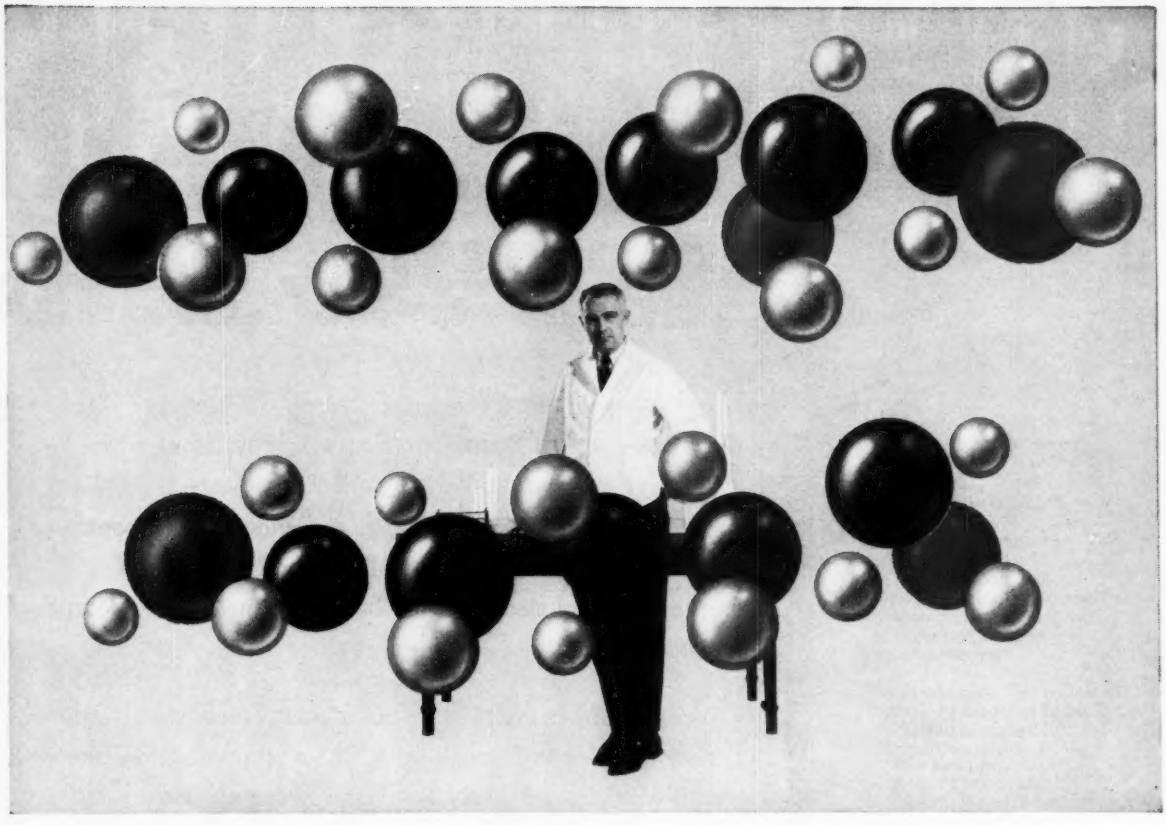
The second half of the year will also be critical in this section. Pluses and minuses of the six months soon to end may be washed out in the next two quarters, result in an average for '57 slightly better than '56. New construction may drop off some, and that could hold down a generally better rate of business activity.

On the other hand, if the automobile industry really gets rolling this year, the area's prosperity could top '56 by some 10%.

Consensus in the steel-strong section of the country is that demand for chemicals has reached a plateau that will continue for some months at least; then will come a gradual resumption of the upswing. The fall, say chemical sellers, will "bustle with market activity again."

There are some real "soft" spots, though, serious enough to spark talk of production cutbacks. Hydrochloric acid is long, and if current efforts of producers aren't successful, some trimming of schedules may be necessary.

Industrial acids (sulfuric, nitric, phosphoric) are, and will remain, in "good" supply with prices reasonably stable through the rest of the year. (Some localized instances of sulfuric price weakening are noted, though.) Supply/demand of alkyds and phenolics is in balance, and prices are also



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steady. Polyethylene, of course, is more available than ever before, but demand is increasing, will eventually catch up with present production potential.

Styrene is firm and growing; upcoming lower contract prices will further jog consumer calls. Market for fertilizers here, somewhat in contrast with conditions elsewhere, is expected to be good. Ammonium sulfate from coke-oven producers, however, will be "touch and go" because of synthetic sulfate and other competing materials. Expect seasonal cutbacks in pesticides. Phthalic would be flooding the market, but although capacity exceeds demand, it won't be produced at capacity levels. Chances are good that demand for phthalic—and naphthalene—will catch up sometime next year.

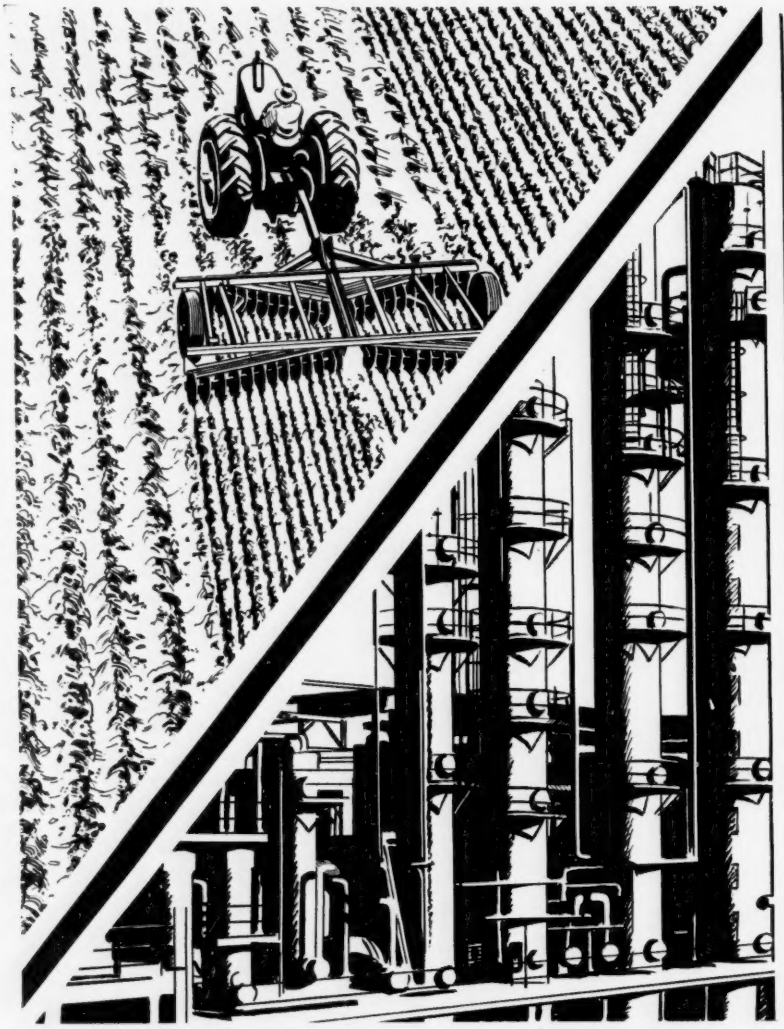
Ethyl, methyl, isopropyl alcohols supplies are "satisfactory"; and no general alcohol price hikes are anticipated for a while. Ethanol tags may go up a little near the end of the year, since it has a tendency to tighten for short periods. As for coal chemicals, toluol and xylol are too much in evidence; pressure for benzol will continue to ease. One comment: benzol producers will be scrambling for customers, where a few months ago it was the other way around. On chlorine, prices and demand steady for now; additional capacity coming in could change the picture on supply.

South and Southeast

Most apparent feature in markets in the South, Southeast and along the lower East Coast is that most companies expect the latter half of '57 to be better for them individually than for the industry generally. Estimates of increases in sales—and a concomitant bettering in profits—range from 10% to a rosy 30% for several firms. Pertinent observation: "I keep reading that business is bad this year, but at a recent meeting of 600 distributors and suppliers, I couldn't find one who believed it."

Another anticipates a 25% gain ('57 vs. '56) for his company—as much as 8% for the industry.

There's unanimity on the trend of prices in this section—they'll continue to edge upward through the remainder of this year. Unanimous, too, is the outlook on chemical consumption and production; just about all items will remain "in balance."



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Northeast

Reports from the Northeast are noteworthy in that they appear to be almost cross-sections of comments from every other area of the U.S. Anticipated market business: up a modest 5-10%; rising manufacturing costs (including transportation, raw materials and labor) will continue to pinch profit margins—but some additional price hikes will ease the squeeze. On the other hand, if business in some items doesn't pick up, price cutting will be initiated; some manufacturers may well "dump" surpluses later in the year.

Only report of big Northeast fertilizer demand comes from Maine—but sales have been running a month earlier than last year. No fertilizer shortages, and insecticides supply is very good, as are demands. Most acids are expected to remain in "reasonable" supply/demand balance, with one major exception—phosphoric. Supply on the latter is "longish" (because of new producers), but not yet critical enough for price cuts. Resins demand is growing, and production is nowhere near the market-saturation point; vinyls, particularly, will have a good second half.

There's a difference of opinion on ethyl alcohol prospects—some say it'll be stable; others look for a "tightening, but not alarmingly." Methanol business will perk up, hit higher levels than in '56. The same is said for tri- and perchlorethylene; fats and oils; chlorine; some aromatics.

On the plentiful side: caustic, phthalic anhydride, acetone, ammonia (again), nitrogens—and a new one, sodium silicate. Suprisingly, some distributors report glycols are hard to get.

Not the Best, but Fair: The statement "hard to get," rarely heard now in the nation's marketplaces, will just about disappear from the lexicon of trade observers in the next half year. Indeed, availability of chemicals in '57 will definitely be on the long side, more than would have been forecast by even the most pessimistic marketers a few years ago.

But although producers will have some problems with surpluses, and consumers with additional higher prices, tempo of business during the next two quarters will check '57 out as far from the best, but in all, a fairly good year.

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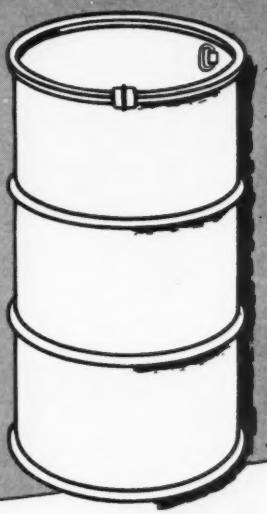

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Packaged in Steel Drums 100 pounds or 425 pounds net

25% solution of sodium methylate in methanol

Analysis:

Bulking Density . . . . 7 lbs. per gallon
Initial Boiling Point. . . . 188° for 25%
Flash Point (Cleveland Open Cup) 85-90°F
Flash Point (Closed Cup). . . . . .80°F
Crystallization Temperature 30°F after equilibrium

• Harshaw warehouses have been geographically located and amply stocked to fill your orders and ship them without delay. If you have a problem our technical service men will work with you toward its solution.

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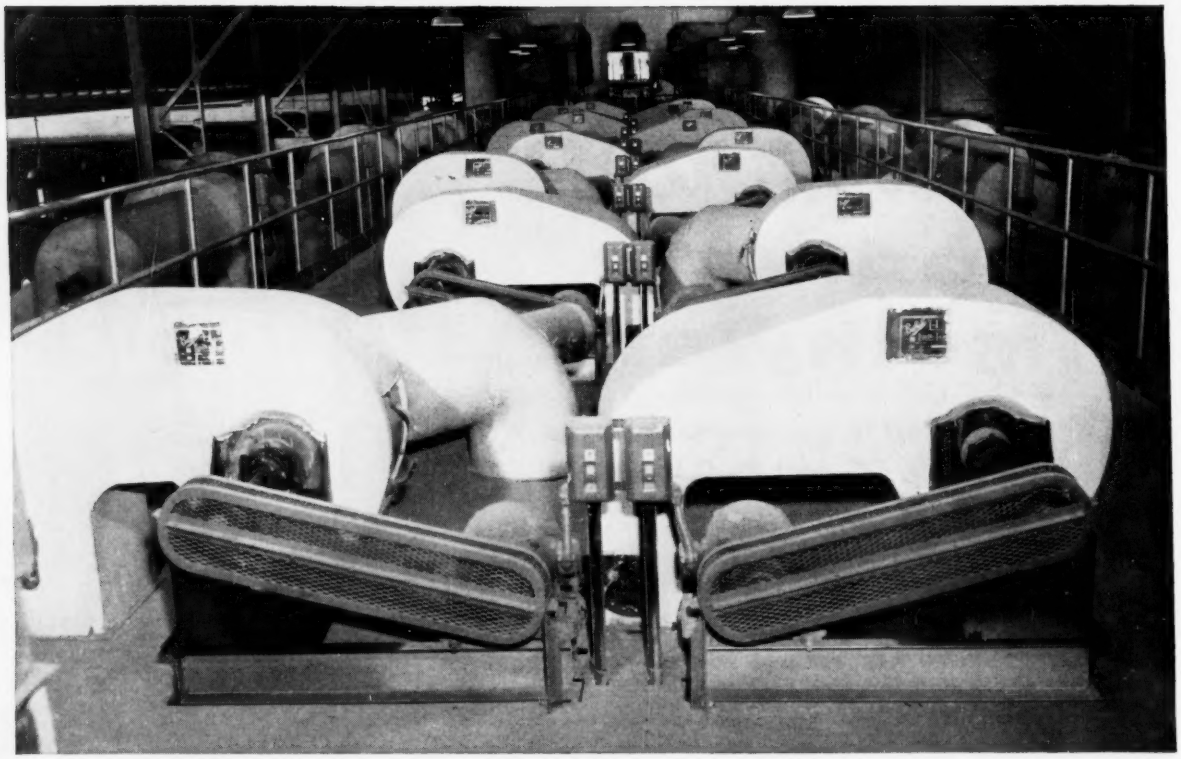

FAN'cy *adj.* **Above real value; superior; above average** ...*Webster*

More and more ventilating and air conditioning jobs today require some pretty fancy, above average planning to locate all units in the allotted space!

Here, the complete selection of "Buffalo" Fans makes your space go further. You have real flexibility as to discharge direction for shortest piping, and choice of the most compact drive arrangement to fit the space. You can use a single large fan or multiple small units — "Buffalo" Type BL Fans are built in 1,000 to 500,000 cfm capacities. You can use a wide group of "Buffalo" Fans for roof installation. You can mount "Buffalo" Axial Flow Fans anywhere in straight ductwork. And for your high-pressure conduit systems, you can get "Buffalo" Type BLH Fans in all sizes and arrangements.

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BUFFALO FORGE COMPANY
BUFFALO, NEW YORK
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"Buffalo"

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING

What Research Means to American Business

American industry plans to invest $150 billion in new plant and equipment during the next four years—more than in the five years 1952-1956. It plans to carry out this record investment even though manufacturing capacity has nearly doubled since World War II. These facts are reported in McGraw-Hill's tenth annual survey of Business' Plans for New Plants and Equipment. They contradict many long-established theories about investment in capital goods.

According to the textbooks, a high and rising level of capital investment is generally followed by a decline. The bigger the rise—so the old theory goes—the bigger the decline will be. But, after a decade of high-level investment and an especially strong rise in the past two years, industry now has plans to keep right on with near-record outlays for plant and equipment. Does this mean some new factor has been added, to change the investment cycle?

The New Factor—Research

The latest McGraw-Hill survey points out one new factor which, more than any other, is changing the nature of the investment process. This is the record outlay planned by U.S. corporations for **scientific research and development**—to create new products and develop new industrial processes. The rapid growth of research in industry, and plans for even more remarkable growth in the years ahead, are shown by the accompanying table.

This year industry plans to spend $7 billion on research and development—up 20% from 1956. By 1960 it will spend $9 billion—enough to create a major new industry.

By 1960 manufacturing industry expects sales to be up 26%—with half the increase in products that were not made in 1956.

Growth of Research and Development Expenditures

(Millions of Dollars)

			PLANNED	
	1955	1956	1957	1960
Machinery	408	506	577	704
Electrical Equipment	950	1,149	1,310	1,637
Aircraft and Parts	1,038	1,558	2,274	3,161
Fabricated Metal Products and Ordnance	134	165	174	210
Professional and Scientific Instruments	185	252	300	453
Chemicals	440	498	528	617
Paper, Rubber, Stone, Clay and Glass Products	149	174	196	233
Petroleum Products	171	205	225	277
Other Manufacturing	1,038	1,279	1,388	1,557
Non-manufacturing industries	254	310	347	419
ALL INDUSTRIES	4,767	6,096	7,319	9,269

What Research Is Doing

Here are some examples of how industrial research is opening up new markets, or compelling the modernization of old facilities:

New automatic controls in petroleum refining will raise the quality of gasoline and reduce the time required for production. A new process for recovering oil from depleted wells promises to multiply our potential reserves.

A new process for treating iron ore will permit the ore to be fed directly into steel furnaces—without the need for blast furnaces or coke ovens.

New turbine engines—made possible by the development of heat-resistant alloys for turbine parts—offer greatly increased power for aircraft, ships and automobiles.

Altogether, industry plans to introduce more new products in 1957-1960 than in any previous four-year period. It also plans new processes on a scale that will make much of our present capacity obsolete. These new products and new processes are the secret behind continuing plans for high investment.

One-third of all manufacturing firms are building new plants this year to produce new products, and by 1960 this may account for 10% to 20% of all capital expenditures. At the same time, manufacturing companies report that over half their capital expenditures in the next four years will be for modernization of equipment and introduction of new processes. Thus the preponderant share of new investment will be based on developments growing out of research.

A New Kind of Prosperity

The keen interest of U. S. business firms in scientific research points the way to a new kind of prosperity for our economy—a prosperity based on deliberate creativeness. As long as we can create new products that will offer better value to consumers or cut costs to manufacturing firms, business will continue at a high level—not at fever pitch, perhaps, and it is to be hoped not at an inflationary pitch. But based on a steady stream of new products and processes, we can have a high level of general prosperity that defies the old laws of boom and bust.

It's Not Automatic

Of course, there is no guarantee. New products do not spring up by magic as the medieval alchemists hoped they would. They are found as the result of long and expensive effort in laboratories and pilot plants. This effort requires an increasing number of trained scientists and engineers. In 1957 alone, manufacturing companies report they will need 7% more of these highly trained people in research and development. And by 1960, they will need an additional 15% to carry out planned research programs.

The effort to maintain prosperity — as well as the national defense effort — will depend increasingly on this supply of scientific and technical personnel. But if we can supply the people, industry now has the plans for a research effort that will put an end to the spectre of idle plants and idle workers.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nation-wide developments. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or parts of the text.

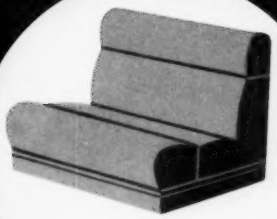
Donald C. McGraw
PRESIDENT

McGRAW-HILL PUBLISHING COMPANY, INC.

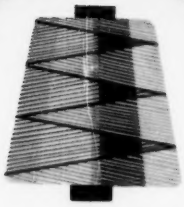
PITTSBURGH

INDUSTRIAL CHEMICALS

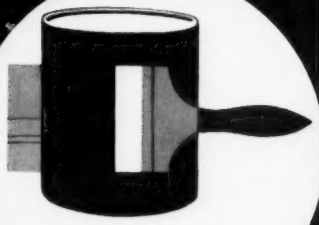
for the



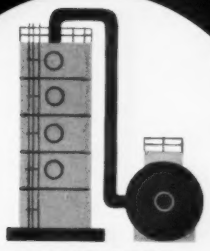
PLASTICS INDUSTRY



TEXTILE INDUSTRY



PAINT INDUSTRY



PROCESSING INDUSTRY

Rx

PHARMACEUTICAL INDUSTRY

P C&C C

INDUSTRIAL CHEMICALS DIVISION
PITTSBURGH COKE & CHEMICAL CO.
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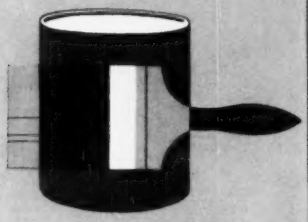
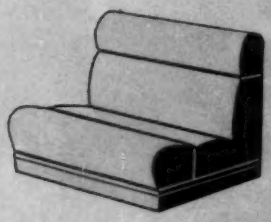
Make PITTSBURGH your "One-Stop" source for Quality-Controlled INDUSTRIAL CHEMICALS!

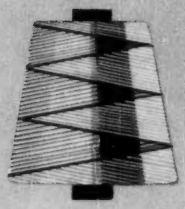
The Industrial Chemicals Division of Pittsburgh Coke & Chemical Company offers you one of the nation's most complete families of coal-derived industrial chemicals and plasticizers.

Now, as always, you enjoy the confidence of doing business with a *basic* producer when you order from Pittsburgh. And Pittsburgh's broad selection of chemicals also offers you these other advantages:

1. A single order for more than one Pittsburgh product simplifies your paper work.
2. By ordering split carload lots of Pittsburgh Industrial Chemicals, you'll enjoy favorable carload prices on *all* of the material you order. Plasticizers can be ordered in split tank cars or tank trucks.
3. The complete facilities of Pittsburgh's Technical Service Department are ready to help you in the application of *any* Pittsburgh product.

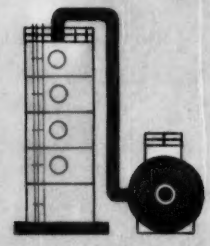
The following listing indicates just a few typical applications for Pittsburgh Industrial Chemicals. Make it *your* check sheet for the reliable, high purity industrial chemicals and plasticizers you need!

INDUSTRY	PRODUCT	TYPICAL USES
 PAINT	**Phthalic Anhydride**	Manufacture of alkyd resins.
	Toluol	Solvent for lacquers, varnishes and synthetic enamels.
	Maleic Anhydride	Used in the manufacture of alkyd resins.
	Xylol	Used as a solvent in lacquers, varnishes and synthetic enamels, and the manufacture of phthalic anhydride.
	Butyl Oleate	Used in the manufacture of resinous paints.
	Phthalocyanines	Used as a pigment in high finish enamels.
	Fumaric Acid	Manufacture of alkyd resins.
	Decyl Butyl Phthalate	Anti-skinning agent in paint production.
 PLASTICS	**Plasticizers**	Impart plasticity to polyvinyl chloride and polyvinyl acetate resins.
	Phthalic Anhydride	Manufacture of plasticizers and polyester resins.
	Phenol	In making phenol formaldehyde resins for molding, and in making adhesives and laminating material.
	Ortho Cresol	Reaction agent in the making of synthetic resins.
	Meta Para Cresol	Production of TCP and phenolic-type resins.
	Maleic Anhydride	Manufacture of plasticizers and polyester resins.
	Benzene	Used in the manufacture of phenol and polystyrene.
	Phthalocyanines	A pigment in plastics production.
	Xylenol	A catalyst and reactant in resin manufacturing.
PHARMA-CEUTICAL	**Phthalic Anhydride**	Used in the manufacture of phenol phthalein and in cortizone manufacturing.
	Phenol	Disinfectants, germicidal soaps and in the production of salicylic acid.
	Toluene	Production of sulfa drugs, benzoic acids, saccharin and other organic chemicals.
	Pyridine	Used in making penicillin, hormones, vitamins, sulfa drugs and other antibiotics.
	Alpha Picoline	Manufacture of vitamins, anesthetics and germicides.
	Beta Gamma Picoline	In production of nicotinic acid, amide and other drugs.



TEXTILE

PRODUCT	TYPICAL USES
Phthalic Anhydride	Textile specialty resins and as dye intermediates.
Maleic Anhydride	Used in the manufacture of dyes and wetting agents.
Benzene	In production of synthetic fibers and dye preparation.
Toluene	Used as a dye intermediate.
Xylene	As a dye intermediate and in synthetic fiber manufacturing.
Pyridine	In waterproofing compounds.
Alpha Picoline	In textile finishing and as a dye intermediate.
Beta Gamma Picoline	In making waterproofing compounds.
Sulfuric Acid	Used in textile finishing.
Ammonium Sulfate	As a fireproofing agent.
Phthalocyanines	In making dyestuffs and as a pigment.

INDUSTRY	PRODUCT	TYPICAL USES
 **PROCESSING**	**Pyridine**	Used as a solvent, HCL acceptor, and rust inhibitor.
	Sulfuric Acid **Oleum**	As a processing agent in general industrial applications.
	Phenol **Maleic Anhydride** **Benzene** **Toluene** **Xylene**	Used as starting chemical for many organic synthetic reactions.

PITTSBURGH INDUSTRIAL CHEMICALS Commercial Data

PHTHALIC ANHYDRIDE
Shipped in 80 lb. bagged flakes and molten in tank cars (100,000 lbs.) and tank trucks (40,000 lbs.).

MALEIC ANHYDRIDE
Shipped in Leverpak drums (250 lbs. net weight).

FUMARIC ACID
Shipped in Leverpak drums (250 lbs. net weight).

PHENOL
39°, 95%, 88-91%, 80-82%. Shipped in drums (approximately 470 lbs. net), tank trucks (4,000 gals.), and tank cars (4,000, 8,000, 10,000 gals.).

ORTHO CRESOL
30° M.P., 25-28C M.P. Shipped in tank cars (4,000, 8,000, 10,000 gals.), tank trucks (4,000 gals.), and drums (approximately 470 lbs. net).

META PARA CRESOL
5° and 12°. Shipped in tank cars (4,000, 8,000, 10,000 gals.), tank trucks (4,000 gals.), and drums (approximately 470 lbs. net).

XYLENOL
5° and 12°. Shipped in tank cars (4,000, 8,000, 10,000 gals.), tank trucks (4,000 gals.), and drums (approximately 470 lbs. net).

BENZENE
Nitration 1°. Shipped in barges (250,000-300,000 gals.), tank cars (8,000, 10,000 gals.), and tank trucks (4,000 gals.).

TOLUENE
Nitration 1°. Shipped in tank cars (6,000, 8,000, 10,000 gals.), and tank trucks (4,000 gals.).

XYLENE
5° and 5°. Shipped in tank cars (6,000, 8,000, 10,000 gals.), and tank trucks (4,000 gals.).

PYRIDINE
2°, 10°, 15°, 20°. 2° shipped in tank cars (35,000 lbs.). Other grades shipped in drums (approx. 450 lbs. net).

ALPHA PICOLINE
Shipped in drums (approximately 450 lbs. net).

BETA GAMMA PICOLINE
Shipped in drums (approximately 450 lbs. net).

SULFURIC ACID
66° Be. Shipped in tank cars (50 tons), tank trucks (18 ton minimum) and barges (750 tons).

OLEUM
Shipped in tank cars (50 tons), and tank trucks (20 tons).

AMMONIUM SULFATE
Shipped carload, bulk (20 ton min.), and in bags (100 lbs. net).

PHTHALOCYANINES
Dry powder shipped in 55 gal. drums (approximately 100 lbs. net); pressed cake and dispersed paste shipped in 55 gal. drums (approximately 400 lbs. net).

PX PLASTICIZERS
See back cover for full information.

PITTSBURGH PLASTICIZERS

PRODUCT	USES	AVAILABILITY
PX-108 **Dilso Octyl Phthalate** PX-138 **DiOctyl Phthalate**	Widely used basic "building type" plasticizers that exhibit an excellent combination of good standard properties.	All Pittsburgh PX Plasticizers are available in 55 gallon drums and in Tank Truck or Tank Car Loads
PX-114 **Decyl Butyl Phthalate**	A low cost phthalate plasticizer having good standard properties. Ideal for sheeting, tubing, wetting, and general extrusion work.	
PX-118 **IsoOctyl Decyl Phthalate** PX-120 **Dilso Decyl Phthalate** PX-800 **Epoxy**	Economical vinyl plasticizers. Suggested for use where low volatility and a higher degree of permanence is required.	
PX-313 **Modified Alkyl Phthalate**	Ideal for use in high quality calendering, sheeting, film, plastisols; and because of its low volatility, low temperature flexibility and excellent heat stability, it is equally suitable for wire jacketing.	
PX-208 **Dilso Octyl Adipate** PX-220 **Dilso Decyl Adipate** PX-238 **DiOctyl Adipate** PX-404 **DiButyl Sebacate** PX-438 **DiOctyl Sebacate**	For formulations requiring low temperature flexibility, heat and light stability, low volatility and low initial viscosity. Used in vinyl film compounds, polyvinylbutyral and synthetic rubber compounds.	
PX-104 **DiButyl Phthalate** PX-917 **TriCresyl Phosphate**	Used in the manufacture of polyvinyl acetate and in nitrocellulose lacquers, synthetic rubber compounds and cellulose ester-type molding compounds.	

WRITE FOR SPECIFICATION SHEETS:

For complete information on uses, specifications, properties and commercial information on any Pittsburgh Industrial Chemical product, write or call for individual specification sheets.

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Agents to Fight a Fungus Forest Blight

An insidious fungus disease called oak wilt (*Chalara quercina* Henry), spreading from its Midwestern focal point, now threatens all the nation's oak trees—worth an estimated $2 billion. No species or variety of oak is immune, no chemical or other treatment yet exists that can bar the fungus's progress without killing the tree.

The U. S. Dept. of Agriculture, eight hard-hit states, and the lumber industry (through its National Oak Wilt Committee) are researching the problem. But only a few chemical companies have tackled it.

The fungus has been found to enter through the roots or wounds in the tree, spread in the sapwood under the bark. Oak wilt finally kills by clogging up water-conducting capillaries. Trees cannot be immunized by inoculation, and, once infected, cannot be cured—only cut (prematurely) for lumber.

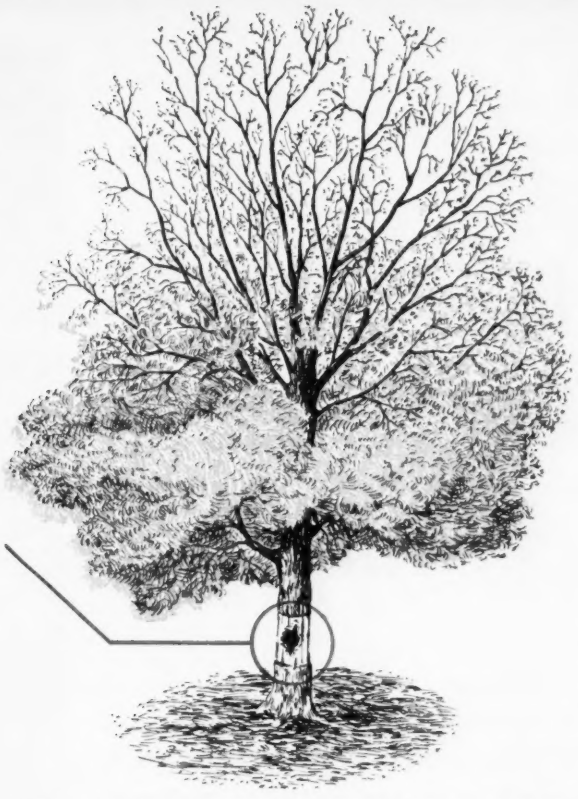
What's Needed: This pathology has suggested to Olin Mathieson researchers and others that a successful agent must be a water-soluble systemic. OM, therefore, is looking for compounds that will be assimilated by the tree, fight off infection at its source. The researchers report no promising agent as yet.

American Cyanamid is likewise embarked on a long-range evaluation of systemic fungicides; it, too, hasn't turned up a hopeful entry.

More optimistic, Monsanto now has a number of experimental systemic fungicides under test, says preliminary results are encouraging but inconclusive.

Pounds of Cure: Lumbermen are eagerly awaiting the results of such research. They now depend on oak for one-tenth of all lumber, use about 1 billion board feet/year—valued at $200 million—of oak for flooring alone. In 30 years, they've seen the disease spread from a few isolated stands in Minnesota, Wisconsin and Iowa to a blight now known in 18 states.

Despite the expenditure of hundreds of thousands of dollars in a fruitless quest for effective control measures, J. R. Hansbrough, director of USDA's division of forest disease research states: "We will continue to work until an ultimate solution of the blight is found."



Under the bark, oak wilt fungus does its lethal work of clogging water-conducting capillaries.

Hansbrough suggests that expansion of oak-wilt centers may be prevented by destroying infected trees and all immediately adjacent, even those that are apparently healthy. This prevents the spread of the fungus via root systems.

Although it's the best known way of preventing the blight's spread, cutting down and burning the adjacent trees isn't always feasible. In the case of ornamental or shade trees, oaks neighboring infected trees may merely be put under observation; if they become diseased, of course, they are destroyed.

USDA pathologist, George Hepting, has reported*: "In the case of woodlands, the wilting trees should be disposed of . . . and then it is sometimes advisable to poison the oaks within a 50-ft. radius, using Ammate (Du Pont's herbicide based on ammonium sulfamate) 2,4,5-T or other effective silvicide. . . ." Average cost: $40-60/stand.

Hepting and others concede that "control" of the blight, as things stand today, merely means keeping losses to an acceptable minimum. Complete elimination of the disease awaits successful chemotherapy, which can combat the fungus, even after infection exists.

What It's Worth: Right now, no one can say what an effective compound would cost—although it should probably be in the general price range of most other fungicides. On the whole, $10-15 million/year to protect a $2-billion reserve would seem to be a sound investment.

*In *Forest Science*, Vol. 1, No. 2, June 1955, p. 95.

DI-CUP KEEPS WHITE STOCK WHITER

First introduced commercially last year, Hercules Di-cup (dicumyl peroxide) has already become well established as a curing agent that improves whiteness and color retention of white stock formulations.

Because Di-cup does not contain sulfur and will not discolor, white stock is whiter from the very beginning. And Di-cup's outstanding color retention keeps the finished product white longer despite exposure to the sun.

A stable peroxide of low volatility, Di-cup gives good retention of elongation, modulus, and tear strength on aging. It also provides low compression set in vulcanizates of natural rubber and most synthetic elastomers.

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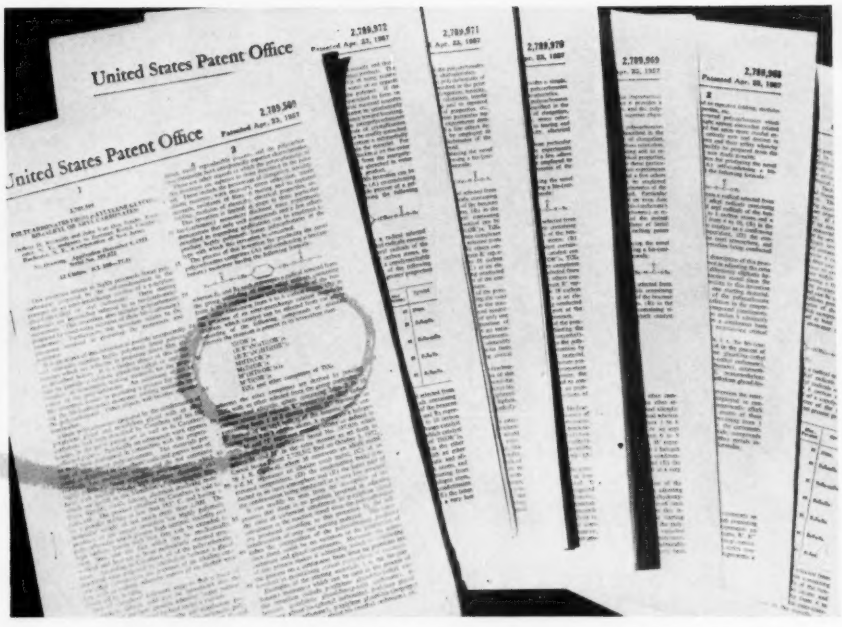

New Eastman Kodak patents show how tetravalent titanium compounds can be used as catalysts to polymerize bis-(carbonate) monomers.

New Twist in Polycarbonate Research

The already-confused field of polycarbonate plastics may be further complicated by the sheaf of new patents (*above*) just issued to Eastman Kodak. The patents—U.S. 2,789,509 and 2,789,964 through 2,789,972—signal Eastman's bid to share polycarbonate development honors with Germany's Farbenfabriken Bayer and with General Electric (*CW Technology Newsletter, March 30, May 11; CW, April 6, p. 96*).

The Eastman patents are a technological surprise. They deal with a new process for making polycarbonates, and also describe products that differ in properties from other known members of this polymer family.

Nub of the new technique is the use of titanium-containing catalysts (e.g., the 1,4-dioxane complex of titanium tetrachloride) with self-condensing bis-(carbonate) monomers to form highly polymeric linear polycarbonates. By using *p*-xylylene glycol bis(ethyl carbonate) and titanium butoxide, for example, a white crystalline product melting at 239 C is obtained.

Such a process is appreciably different from what has been reported on Bayer's polycarbonate research —in which there is no mention of titanium compounds. Bayer has prepared polycarbonates by reacting (1) an emulsion of a polyphenol in methylene chloride, caustic solution, phosgene and a quaternary ammonium hydroxide catalyst (2) an organic base, polyphenol, phosgene, and solvent (e.g., carbon tetrachloride) in a nonaqueous system; or (3) dialkyl carbonates and a polyphenol—which produces a polymer via ester exchange. The products obtained are somewhat higher-melting (around 268 C vs. the 195-250 C range reported by Eastman). Too, Bayer's products are less crystalline than the polycarbonates reported by Eastman.

General Electric has never disclosed much about its approach to polycarbonate preparation. But it is believed to cover the same broad areas as Bayer's.

Eastman isn't parting with technical details of its process beyond those given in the patents but does admit the polymers are quite different from those of either Bayer or GE. The firm, furthermore, says it is not continuing development of the polycarbonates described in the patents because of experience gained from its "later work." Eastman says that the patented products (which have been produced only in the laboratory) are "not important, technologically."

Production Problems: One problem in commercial development of such materials may lie in the handling of the necessary titanium catalysts. Titanium butoxide and many of its homologs, for example, are thick liquids; they must be dissolved (thus reducing the number of equivalents per a given amount of solution) to be used to advantage.

Still, it is quite possible that Eastman could make products competitive to those of Bayer and GE if it wanted to. Though Eastman's members of the polycarbonate family are remote from those offered by GE (Lexan) and Bayer (DO 202), it doesn't necessarily

follow that Eastman's method is inapplicable to making other polycarbonates.

If nothing else, the new patents—applied for between Dec. '53 and Feb. '54—have served notice that Eastman has done a lot of research on polycarbonates. Only the barest hint of its past and current work may be apparent so far.

The Film's the Thing: One thing that all three firms have shown is a strong interest in polycarbonate films. Bayer, first to market a commercial product (*CW Technology Newsletter, May 25*), is selling film for electrical insulation. GE has included film as one likely end-use for its Lexan.

In its patents, Eastman mentions its interest in films (as well as in fibers and molded products). The firm reports that the new polymers can be used as photographic film supports for either black-and-white or color film. A typical patent points out that "the photographic films that can be produced can advantageously comprise a film support of the above-described polycarbonates upon which is deposited one or more layers of a silver halide emulsion, which can contain appropriate sensitizers or other additives to suit the intended photographic

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Chemicals PASSAIC, N.J.

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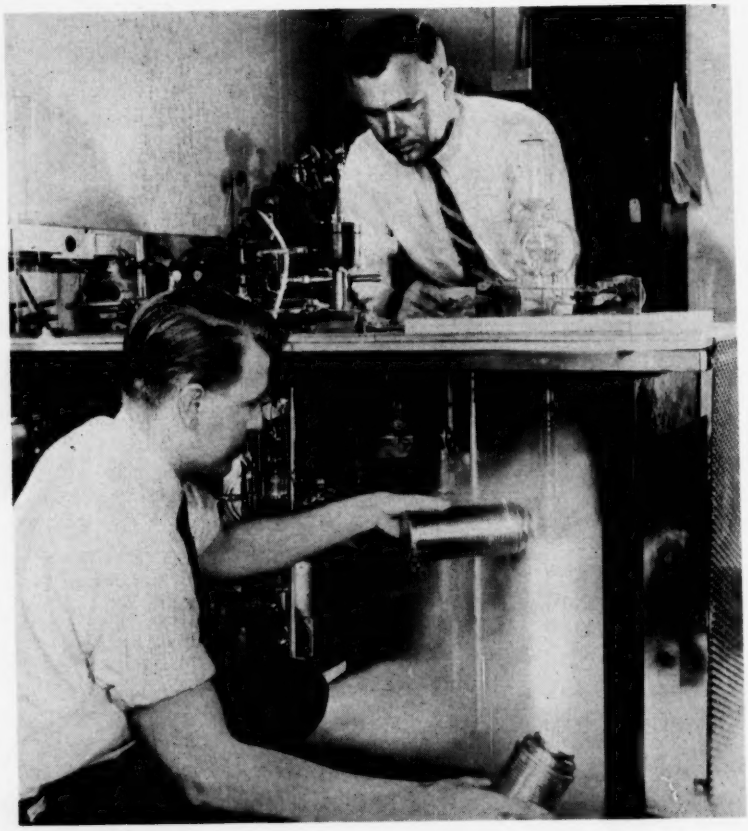

Pouring a Glassful of Gas

Gases will pass through glass, but not through high-alumina ceramics. Evidence for this was recently turned up by Bell Telephone Laboratories researchers H. Kraft (*left*) and K. B. McAfee, Jr., shown pouring liquid air into their gas diffusion apparatus. It takes extreme pressures and long periods of time, however, in order to force gases through glass. For most practical purposes, glass makes a good gas container. Why then, is Bell interested? It's researching better materials for hermetically sealed insulators needed in communications systems.

galvanized iron can now be painted *without* weathering

Time was when galvanized iron downspouts like this one had to weather at least six months before they could be painted. Not any more! Now the painter can prepare new galvanized iron for immediate top coating. With application of a wash primer based on Shawinigan's FORMVAR or BUTVAR, painting can be done half an hour after priming.

FORMVAR or BUTVAR based wash primers adhere tenaciously to galvanized iron, provide an excellent foundation for top coats and assure the user of outstanding corrosion protection. This rugged metal conditioner provides a tough, durable coating only 0.3 to 0.8 mils thick. It is easy to apply with brush or spray and is equally effective on aluminum, tin and steel. FORMVAR and BUTVAR wash primers are easily formulated in a regular ball or pebble mill.

Wash primers have lengthened the life of metals in many applications and have opened profitable new markets for paint manufacturers. Write today for full technical information and suggested formulations to Shawinigan Resins Corporation, Department 1122, Springfield 1, Mass.

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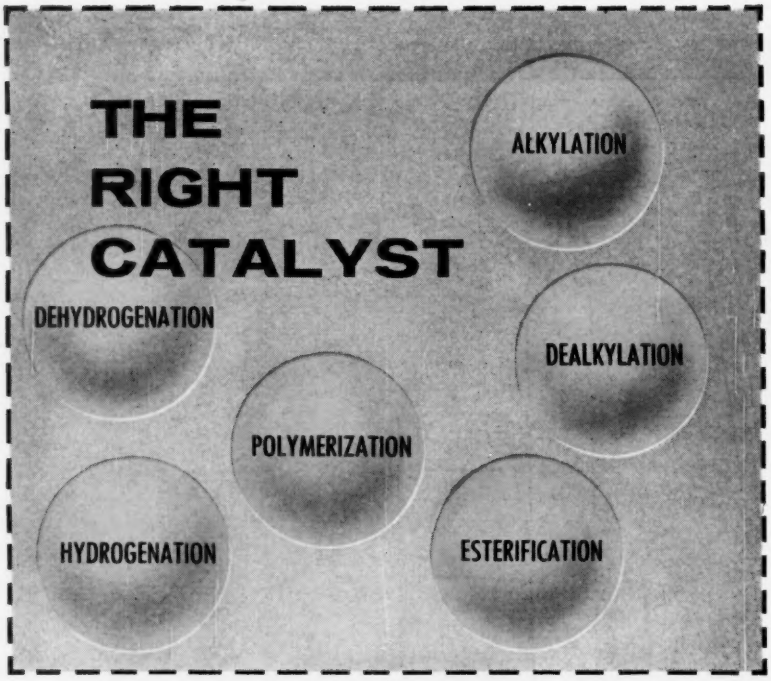
SHAWINIGAN RESINS®



Houdry offers the chemical industry years of experience in catalytic processing plus complete catalyst research and manufacturing facilities. As a result, Houdry is uniquely qualified to design, develop, produce, and help you select *the right catalyst* for highest process efficiency.

Here are just a few of the many catalysts now available: A variety of *Platinum and Palladium Catalysts* for hydrogenation and dehydrogenation processes • a complete series of *Silica-Alumina Catalysts* for alkylation, dealkylation, and polymerization • Special *silica aluminas* for use as catalyst bases • *Chromium Oxide Catalysts* for dehydrogenation processes.

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RESEARCH

use." This end-use is appropriate in view of earlier findings that the films feature high strength, good resistance to tearing and repeated folding. (Polycarbonates are also self-extinguishing when exposed to flame.)

Move to Mixtures: Broader applications than film are also a possibility. Eastman researchers have checked the mechanical admixture of their polymers with other polycarbonates (they found that properties averaged out); they have also blended or mixed unmodified forms with such materials as polyesters, polyamides, polyurethanes, polyethylene and polystyrenes.

Considering Eastman's strong position in plastics (cellulose acetate, polyethylene) and its interest in cellulosic and acrylic fibers, such experimentation has more than academic significance.

REPORTS

Lube Additives: The U.S. Dept. of Commerce's Office of Technical Services (Washington 25, D.C.) has made available a report on "Synthesis of Halothioamides" (PB 121764, 50¢) which describes research done to synthesize and evaluate halogen-containing thioamides as a potential lubricant additive.

• Adhesion fundamentals are explored in "Ellipsometry: 1—General and Theoretical Considerations; 2—Application to the Fundamental Examination of Adhesion" (PB 121663, $1.25); and "Investigation of the Nature of the Forces of Adhesion" (PB 121555, $2.25).

APPARATUS

Analyzer: Fisher Scientific (Pittsburgh) now offers an electroanalyzer to simplify alloy analysis. The instrument plates out alloy components one at a time on a platinum electrode. The alloys can then be weighed. Price: $525.

EXPANSION

• Union Carbide Nuclear Co. has started construction of a $500,000 office and laboratory at Grand Junction, Colo., plans to move its research and development activities from Rifle, Colo., to the new location next year.

• Food Research Laboratories, Inc. (Long Island City, N.Y.), has completed a deal for a larger building.

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- Good year-round climate; efficient municipal and state government
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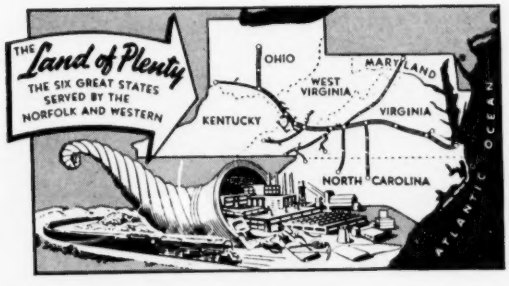


Write, wire or phone:

L. E. Ward, Jr., Manager
Industrial and Agricultural Dept.
Drawer CW-764 (Telephone Diamond 4-1451, Ext. 474)
Norfolk and Western Railway
Roanoke, Virginia

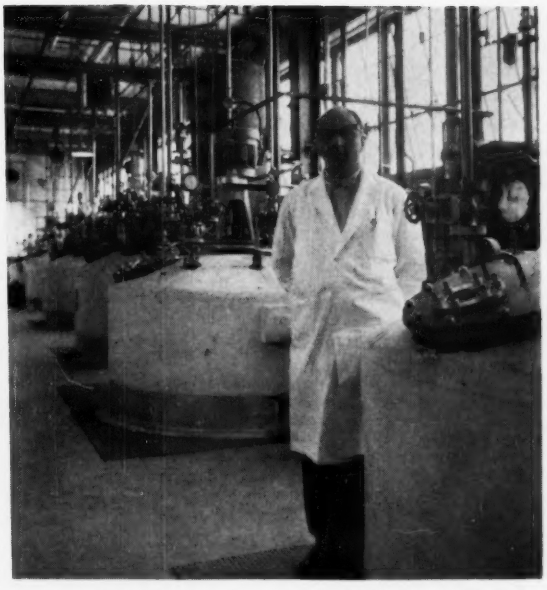
Norfolk and Western RAILWAY

TEAM MANAGER Ofner picked and directed team that designed, built new terpenes plant.

Teamwork Takes

ENGINEER O'Connor directed construction, coordinated team, put heavy equipment on hilltop.

DESIGNER Barker (left) engineered most of plant, coached the firm in handling acetylene.



CONSULTANT Chase was switched from vitamin-A production, solved hydrogenation problems.

PROCESS SOLVERS, Sturzenegger (right) devised diketene process, Johnson assisted.

Terpenes' Measure

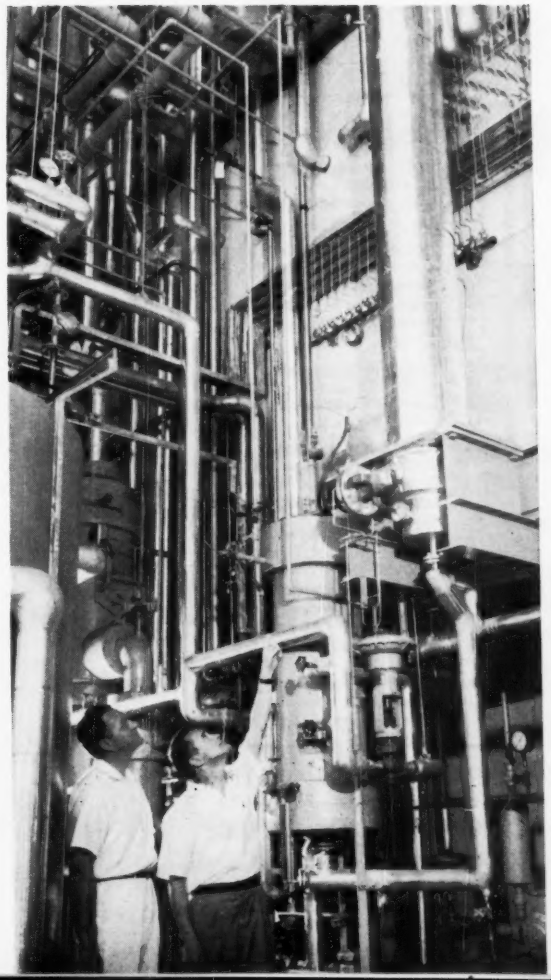
"When you're developing a new process, get the men you want—no matter where you get them. And, above all, stress teamwork—all the research in the world is worth nothing if you don't know how to take full advantage of it."

That's the advice of Alfred Ofner, chain cigar-smoking director of technical development for Hoffmann-LaRoche at Nutley, N.J. This week, Ofner took time to reflect on how the application of this theory, enabled Roche to come up with its new multimillion-dollar CVA (citral vitamin A) process—from laboratory to plant—in just six years.

Need for Speed: From the outset of its ambitious project, Roche realized that quick action was needed. Applications for Roche's basic patents—covering research of teams led by Ofner's co-workers Walter Kimel, Joseph Surmatis—were filed only a few days ahead of European applications in the same general area.

To get the jump on this competition—particularly in those countries where patents do not guarantee much protection—the company got Ofner to organize a top-notch development team.

Ofner's first move was to scrap Roche's customary process-development procedure of putting up a building and arranging a small plant inside, in the hope that it could be enlarged later. The CVA process has a relatively low margin of profit, therefore had to start with large-scale equipment. And Ofner knew it would take



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Samples, specifications and detailed information upon request.

TC
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PRODUCTION MAN Colaianni will run the terpene unit.

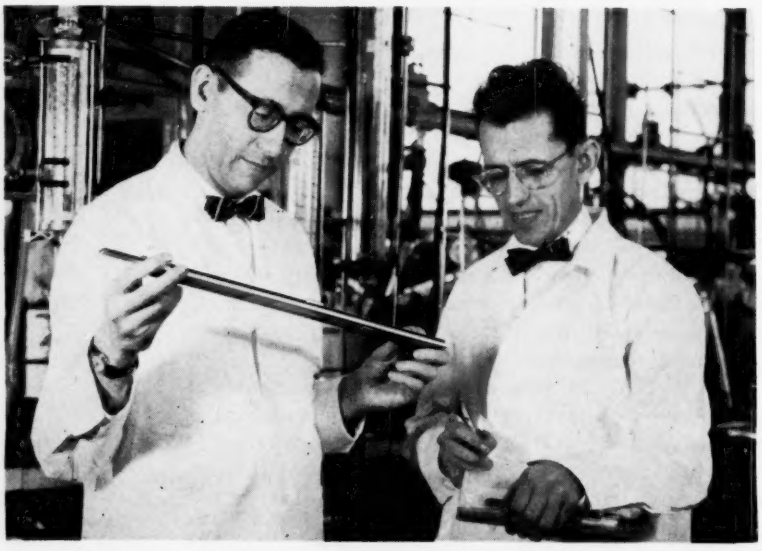
a closely knit team of experts to mesh the unconventional synthesis on which CVA is based.

To engineer the initial process reaction, between acetone and acetylene in liquid ammonia, Ofner needed an acetylene expert. His choice: Wally Barker, a chemical engineer with a strong background of acetylene chemistry acquired in Canadian industry.

Barker designed five reactors for low-temperature, low-pressure reactions, placed them in separate explosionproof stalls. Interchangeable for maximum flexibility, these five batch units handle both the initial acetylene-acetone reaction and subsequent ethynylations (by which carbon chains up to C_{40}—β-carotene—are synthesized).

Catalytic Hydrogenation: The second processing step—selective hydro-

RESEARCHERS Kimel (left) and Surmatis devised basic routes.



New process helps steel companies to keep streams clean!

Acid-recovery process, now available from Koppers, eliminates pickle liquor disposal problem

For years the steel industry has been wrestling with the problem of pickle liquor disposal . . . attempting to find an economical way to avoid river pollution. Present disposal methods are expensive and wasteful. Now, however, an improved process for the *recovery and regeneration* of spent pickle liquor promises to cut costs as well as eliminate the acid disposal problem.

This new process, available in this country only from Koppers, saves for re-use up to 50% of the original sulfuric acid. As a result of this saving, operating costs for this new process are substantially below any presently available disposal method.

Developed by Inland Steel Company, and adapted commercially by Zahn & Co. of West Germany, this process is now being used successfully in three European steel plants. It requires no additional chemicals and makes pickling action more uniform by continuous recycling of the regenerated acid, thus insuring a constant concentration in the pickling tanks.

This Koppers Inland-Zahn process is of particular interest to those plants handling 10,000 gallons of effluent or more per day. Koppers also designs and builds acid neutralization systems for both large and small pickling operations. Send the coupon for complete information. Koppers Company, Inc., Engineering and Construction Division, Chemical Department, Pittsburgh 19, Pennsylvania.

FREE TECHNICAL LITERATURE
Koppers Company, Inc.
Engineering & Construction Division
Chemical Department
Pittsburgh 19, Pennsylvania

Please send me descriptive literature on the following:

☐ Regeneration of steel pickling solutions by the Koppers Inland-Zahn Process

☐ Lime neutralization of spent pickle liquor by Koppers

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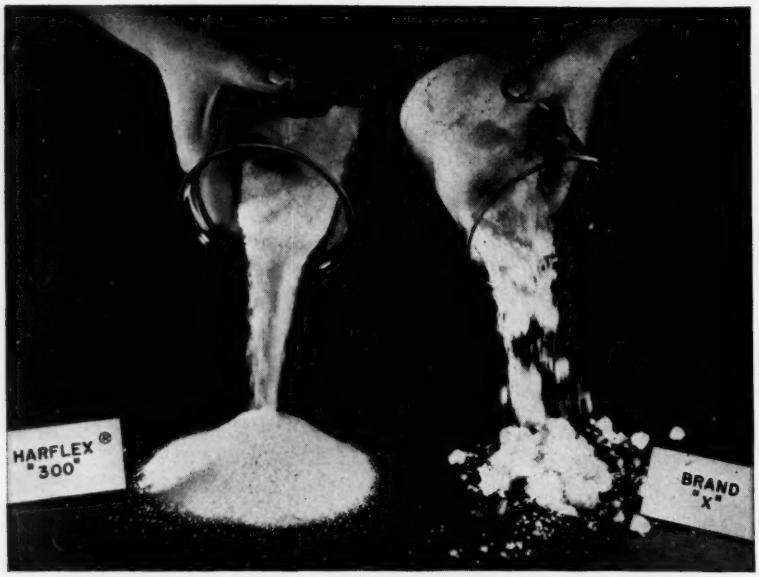

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HARFLEX® 300 is a permanent polymeric plasticizer, readily adaptable to dry blending. Write for our free technical bulletin that gives full information about **HARFLEX® 300**. Samples for your test or experimental work are also available at your request.

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genation of methybutynol to methylbutenol—utilizes Roche's patented Lindlar catalyst (palladium on calcium carbonate poisoned with lead) and a technique similar to that used in the company's vitamin-A production. To handle this portion of the CVA project, Ofner recruited George Chase from his vitamin-A production berth. Chase—a chemist—acted as a consultant, while Barker handled the design work.

The third processing step—treatment of methylbutenol with diketene to form methylheptenone—posed the toughest problem. Union Carbide Chemicals made the material, but wouldn't ship it because of the explosion hazard. Since the only solution was for Roche to make its own diketene, Ofner added August (Gus) Sturzenegger to the team, assigned him the task of engineering the unit from laboratory to full-scale plant equipment.

To make diketene, acetone is cracked to ketene and methane; the ketene is autocatalytically dimerized and fractionated. This is the only part of the CVA project that is suited to continuous operation. When it came time to install instrumentation in this section, Sturzenegger was again the logical man for the job.

To supplement his background (MS in chemical engineering, PhD in chemistry) and special knowledge of the operation, Sturzenegger studied instrumentation at Foxboro Co. for two weeks*. Back at Roche Park, he designed and supervised the instrument installation, including more than 11,000 ft. of instrument air lines.

While Ofner's three process specialists wrestled with the intricate problems of CVA chemistry, two others were tackling the job of getting the plant built and ready to run. To coordinate the team, Ofner needed an adaptable engineer who could get along well with people. His choice: William O'Connor, a mechanical engineer from the company's Nutley engineering staff.

It was O'Connor's recommendation that helped keep the project in Nutley. Originally, CVA was scheduled for Roche's Cambridge, O., plant. But process design required a 700-ton refrigeration plant to be located above the acetylene reactors. To cut opera-

*Foxboro runs a special instrument school, as do several other instrument makers.

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ting noise and vibration, reduce building-design problems, O'Connor suggested setting the acetylene reactor building into the side of a hill, with the refrigeration plant resting solidly on the hilltop.

Gravity-flow operation is the result —there isn't a pump in the building. And the idea has caught on—a new Roche project is taking shape on the hill alongside CVA. The plant was built by Roche's own engineering and construction staff.

Newest member of Ofner's team is Lou Colaianni. Drafted from vitamin-A production, Colaianni has been familiarizing himself with the entire process setup, will take charge of production when the final process kinks have been ironed out.

Progressive Precedent: By Roche's traditionally conservative standards, the six-year-old CVA project is a crash program. But the company's management foresaw the commercial potential of the terpenes (of which vitamin A is a derivative), gave Ofner a blank check for process development that couldn't be justified on vitamin-A potential alone.

Among the more promising products resulting from this work, linalool and linalyl acetate are already available in market quantities. Both are large-volume essential oils in compounding perfumes, particularly in soap perfumes, many of which contain high percentages of the terpenes. And, on the strength of the terpene process work, the Roche trademark may turn up on other perfumery oils, food flavors and food colors (*CW, Jan. 26, p. 66*).

Just as pseudoionone (one of the new process's products) freed Roche from dependence on lemongrass oil in vitamin-A production, so too may other synthetic terpenes provide the uniform quality, stable price and practically unlimited availability that can't be matched by natural raw materials. (Roche recently set up an Aromatics Division to exploit this potential market.)

End Justifies the Means: In summing up the project, Ofner says: "On small jobs, it wouldn't pay to work the way we did. On a big job—one where engineering is the biggest factor —it wouldn't pay to do it any other way. You've got to put together the best team—to get the best result."

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Calcium chloride is one of the most versatile chemicals that ever came down the pike. Spread on gravel roads, parking or shipping areas, $CaCl_2$ absorbs moisture, stops bothersome, unhealthy dust. This same hygroscopicity makes it ideal for drying air and other gases.

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EQUIPMENT

Lightweight Vibrator: Cleveland Vibrator Co. (Cleveland, O.) is marketing a new air-operated vibrator that, it says, may be used to move all types of bulk materials, such as cement, sand, chemicals and coal, through bins, chutes, hoppers and tubes. Called the type KO vibrator, it's made with either an aluminum or semisteel cylinder block, and is permanently lubricated with molybdenum sulfide dry-film lubricant. With aluminum cylinder, the 2-in. KO unit weighs only 60 lbs.; the 4-in. model, 79 lbs.

•

Ball Valves: Two new developments in ball valve design were announced last week:

• Chemtrol Corp. (Compton, Calif.) is now producing plastic valves up to 3-in. size for corrosion service. Compatible with standard fittings and piping methods, the Chemtrol valves are rated at 150 psi., temperatures of more than 200 F, depending on material. They're available in PVC, Penton, polyethylenes and copolymer materials.

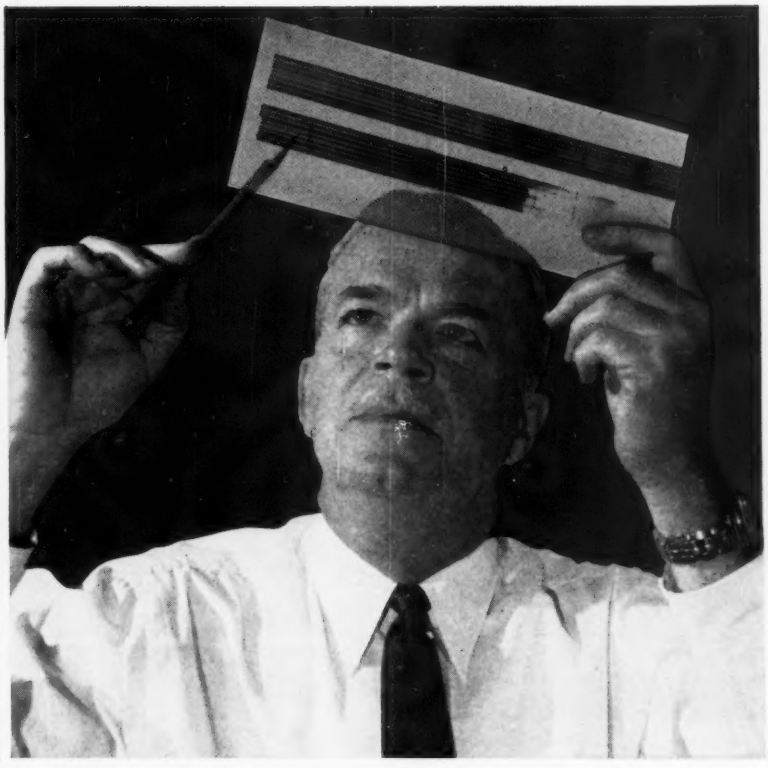
• Hydromatics, Inc. (Cedar Grove, N.J.) is now producing 8-in. ball-type control valves for high-pressure systems to 2,000 psi., at temperatures to 225 F. The valves are controlled by a pressure-operated actuator, are said to provide rapid response—capable of two full-travel cycles per second or 10 cycles/second through any 10% portion of a full stroke.

•

Easy-Fix Pump: The LaBour Co., Inc. (Elkhart, Ind.) says that it's Type SZ single-stage centrifugal pump permits easy maintenance by the removal of the working parts as a unit apart from the piping system. To remove or replace the single assembly, it's not necessary to disturb piping, motor or alignment. The SZ features a fully open impeller, which uses no sealing rings or closely fitted running parts.

•

Mechanical Seals: Borg-Warner Corp.'s subsidiary, Byron Jackson Pumps, Inc. (Los Angeles, Calif.), says its new packaged mechanical seal permits installation without measurements or reference to installation drawings. The seal is assembled as a cartridge unit, features a presetting ring. For installation, the seal is slipped



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The starting place of a new product is frequently in the precipitate at the bottom of a test tube – or in the lines of a spectrograph. On the other hand, product development in reverse – that is, exhaustive analysis of what goes into a product – often presents new clues to improvement by slight changes in chemical structure.

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MICHIGAN ALKALI DIVISION
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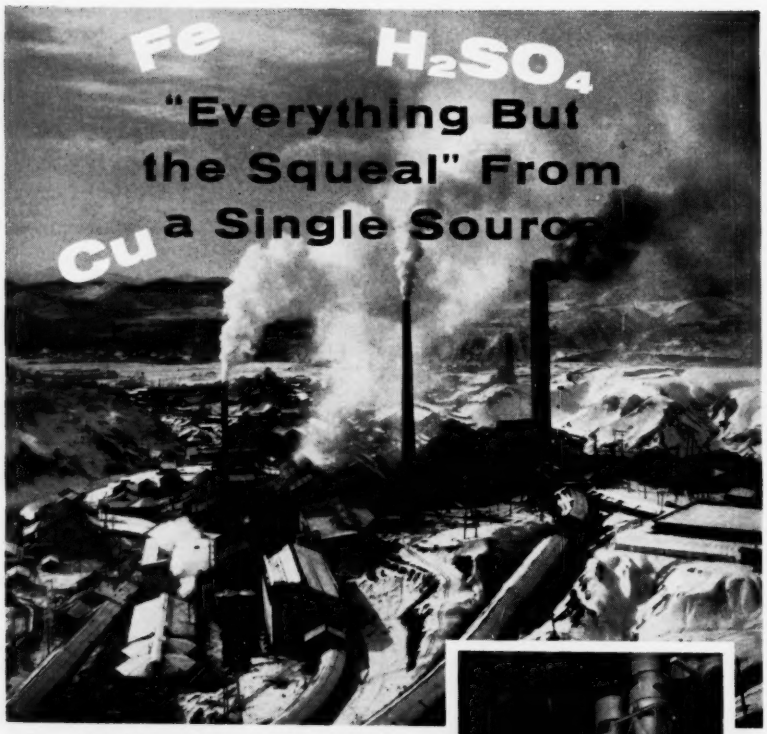
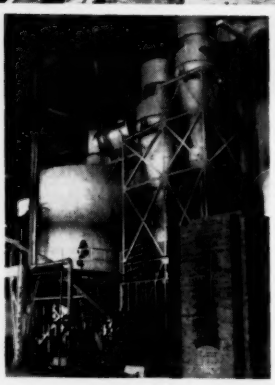


Dowa Mining's Kosaka hydro-metallurgical plant where Dorrco FluoSolids System roasts 83 metric tons of complex copper-zinc concentrates per day.



One of two 20 ft. dia. FluoSolids Reactors roasting 235 metric tons per day of crushed pyrrhotite ore at Dowa's Okayama Plant.

Fluidization—
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Processing copper bearing pyrrhotite ore, the Dowa Mining Company at the Okayama, Japan plant is producing . . . and all from the same raw material . . . sintered iron ore for blast furnace use, cement copper and sulphuric acid.

Of major importance in this unique installation is the Dorrco FluoSolids System. Utilizing the proven principles of fluidization, the crushed raw ore is roasted under controlled conditions in the System . . . providing SO_2 gas for contact acid manufacture . . . Roaster calcine is acid leached for copper recovery and leach residue is sintered as blast furnace feed.

Dorr-Oliver in conjunction with our associates in Japan, Sanki Engineering Co. Ltd. of Tokyo, have collaborated with Dowa Engineers before. At Dowa's hydro-metallurgical plant in Kosaka, Japan, the Dorrco FluoSolids System is a prime factor in the world's first successful roasting of copper and zinc with electro winning of both metals.

For detailed information on D-O equipment and services involving the separation of finely divided solids in suspension or fluid techniques, drop a line to Dorr-Oliver Inc., Stamford, Connecticut.

FluoSolids is a Trademark of Dorr-Oliver Inc.
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onto the shaft and into the stuffing box. Seal flange is bolted to the stuffing box. The shaft sleeve collar is fastened to the shaft and the presetting ring is moved the length of the set-screw slot, locked in place. The seal is recommended for two-bearing pumps (e.g., boiler-feed pumps) and vertical pumps requiring impeller adjustments.

•

Aluminum Elbows: New addition to Childers Mfg. Co.'s (Houston, Tex.) line of aluminum weatherproof jacketing for insulated lines, towers, vessels and tanks is a two-piece elbow. Deep-drawn from 0.020-in. #3003 aluminum alloy, the elbow comes in 90- and 45-degree ells, has factory-applied moisture barrier. Aluminum sheet-metal screws are used for fastening.

•

Plastic Gloves: For protection of hands from skin infection and protection of precision equipment from corrosive perspiration and body acids, Wilson Rubber Co. (Canton, O.) offers new Wil-Gard Compar plastic gloves. The plastic is sulfur-free, is recommended for petroleum-base degreasing agents. Not recommended: use in steam, water, alkali degreasing agents. Available in sizes 8 to 11, the gloves come in 10½-, 14- and 18-in. lengths, standard and heavy-duty weights, have curved-finger styling.

•

Resin Applicator: Pittsburgh Coke & Chemical Co. (Pittsburgh) offers the facilities of its engineering department to firms interested in commercial exploitation of its new machine for applying Tarset, a coal tar-epoxy resin coating, to the interiors of pipes. PCC says the applicator, developed by PCC's Protective Coatings Division, will lay a smooth film on interior surfaces of 20-ft. lengths of 3-, 4- and 6-in. pipe, and that a 15-20-mil thickness can be applied in a single pass.

•

Spec Mask: For eye-glass-wearing workers who must wear gas masks, Acme Protection Equipment Co. (South Haven, Mich.) has come up with a face piece with built-in spectacle frames. A boss, molded into the face piece, allows frames to be mounted where desired. Spectacle frames or complete prescription lenses can be supplied.

ACETALDEHYDE AMMONIA
ACETOPHENONE
ACETYL CHLORIDE
ANISIC ALDEHYDE
ANISYL CHLORIDE
ANISYL CYANIDE

BENZALACETOPHENONE
BENZHYDROL
BENZHYDRYLAMINE
BENZHYDRYL CHLORIDE
BENZOPHENONE TECH.
BENZYL ALCOHOL TECH.
BENZYL CYANIDE

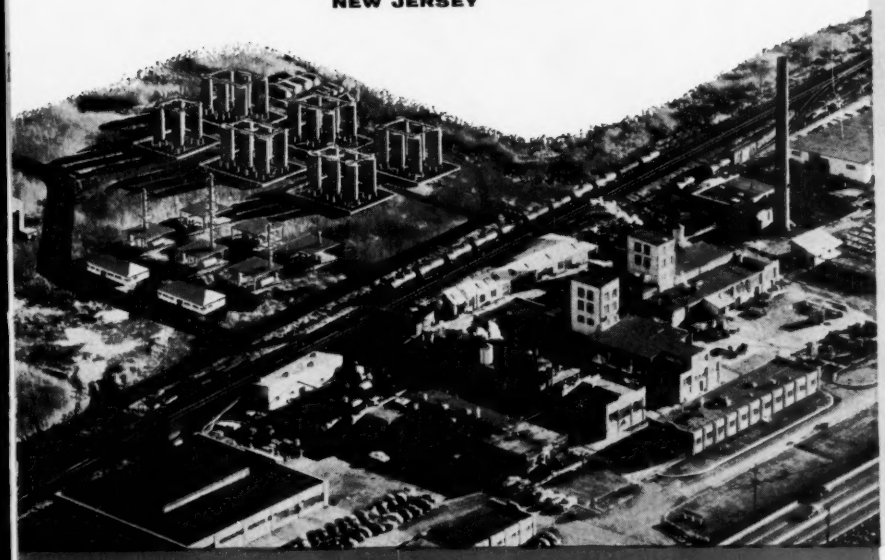
n-CAPROIC ACID
CAPRYLOYL CHLORIDE
p-CHLORBENZHYDRYL CHLORIDE

Intermediates

The TRUBEK LABORATORIES Inc.

INTERMEDIATES DIVISION
EAST RUTHERFORD
NEW JERSEY

DIBENZYL ETHER
DICYCLOHEXYL CARBINOL
DICYCLOHEXYL KETONE
p, p'-DIMETHOXYBENZOPHENONE
DIPHENYL ACETONE (unsym)
DIPHENYL METHANE
ETHYL FORMATE
ETHYL MALONIC ESTER
ETHYL PHENYLACETATE
beta IONONE
ISOVALERIC ACID
LAUROYL CHLORIDE
p-METHOXY PHENYLACETIC ACID
METHYL HEPTENONE
METHYL PHENYLACETATE
MYRISTOIL CHLORIDE
PALMYTOIL CHLORIDE
PHENYLACETIC ACID
PHENYL PROPYL ALCOHOL
PHENYL PROPYL CHLORIDE
POTASSIUM PHENYLACETATE
PROPIONYL CHLORIDE
SODIUM PHENYLACETATE
n-VALERIC ACID
And Other Intermediates



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Our technically trained personnel are available to discuss the refining of any solvent mixture or organic by-product.

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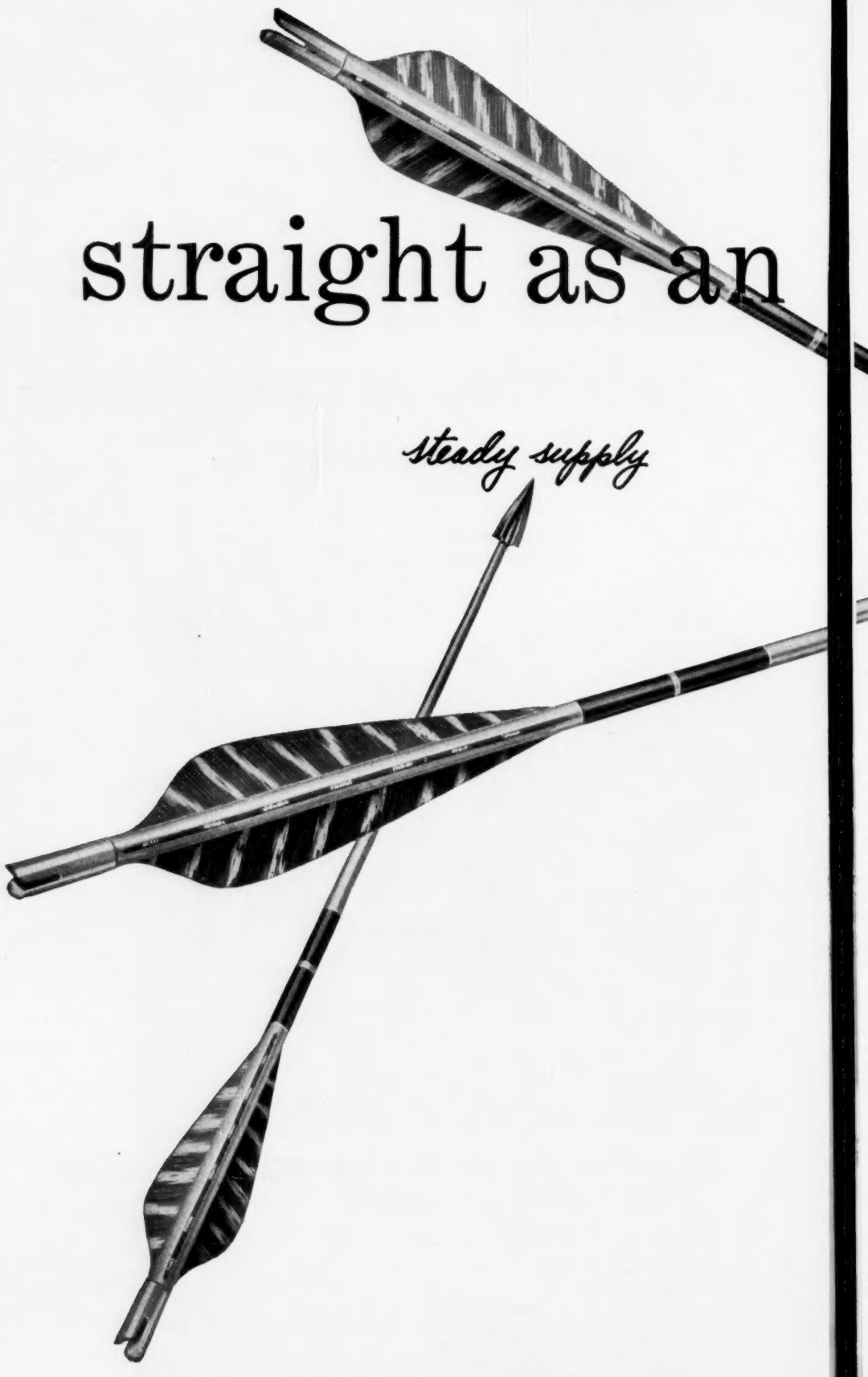

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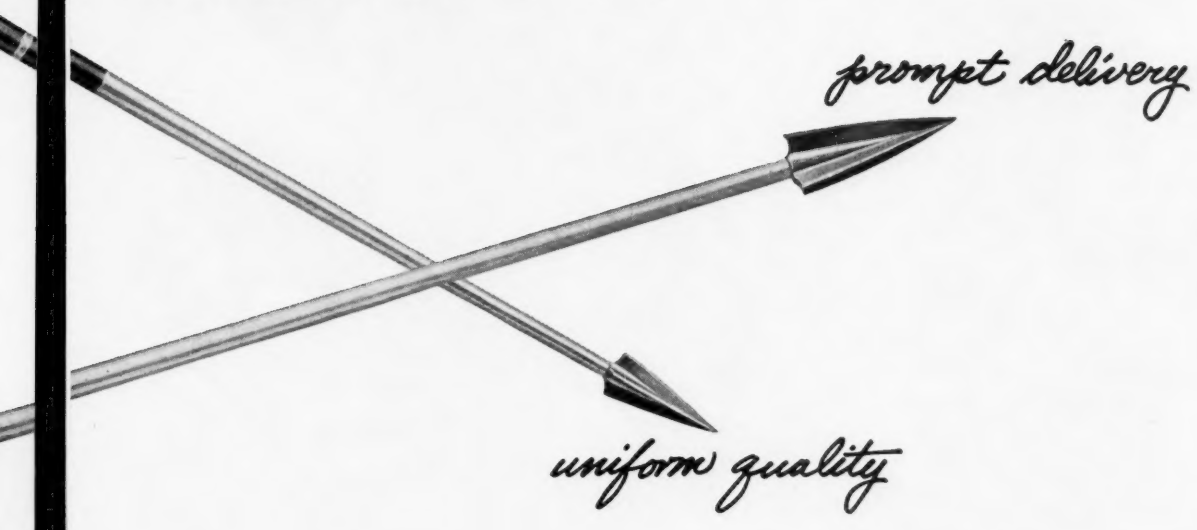

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ETHYL ACETATE	ACETIC ACID
BUTYL ALCOHOL	AMYL ACETATE
BUTYL ACETATE	REFINED FUSEL OIL
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It's U. S. Matchless CARBOLIZED!

Flexible! Easy to rack!

This is the most rugged hose ever built for the refining and petro-chemical fields.

Yet it is the lightest and most flexible of all covered fire hose! Ask the fire crews who handle it.

A fast-running, husky fire crew can pull it over jagged concrete, around sharp pillars—without any damage to it. Kinking or being run over does no harm. Even rats and termites can't chew it (believe it or not, over 600 feet of ordinary fire hose were eaten up last year in just *one* Texas plant). U. S. Matchless® has a special cord ply carcass made of "Ustex" fabric, resistant to rot and mildew. The white (or black) oil-proof neoprene cover resists oils, acids, fumes and strong, hot sunlight.

Other hose made by United States Rubber Company for the refining and petro-chemical fields include:

- Flexlite, the all-Dacron* Single Jacket (weighs 48 lbs. per 100 ft.) (withstands 500 lbs. test pressure)
- "Reliance®" Double Jacket Dacron reinforced (weighs 50 lbs. per 100 ft.) (withstands 400 lbs. test pressure)
- "Reliance" Double Jacket Dacron reinforced (weighs 54 lbs. per 100 ft.) (withstands 600 lbs. test pressure)

Obtainable at any of our 28 District Sales Offices, at selected distributors, or write us at Rockefeller Center, New York 20, N. Y.

*DuPont's trademark for its polyester fiber.

US RUBBER

Mechanical Goods Division

United States Rubber

Technology
Newsletter

CHEMICAL WEEK
June 1, 1957

A new sugar-based chemical, octakis (2-hydroxypropyl) sucrose, has been produced by Dow Chemical. It's made by reacting sucrose with propylene oxide, each hydroxyl group in the sucrose molecule reacting with a molecule of propylene.

Dow predicts the new compound, tradenamed Hyprose SP 80, will find use as a cross-linking agent for polyurethanes, or as a plasticizer. What's more, it can be esterified with fatty acids (as many as eight moles of acid to one mole of Hyprose SP 80). "These esters," says Dow, "show promise as emulsifiers and detergents."

A different process for making surface-active sucrose esters was previously developed by Foster D. Snell for the Sugar Research Institute.

•

Pyroceram, an essentially crystalline glass, made its bow last week as Corning Glass dedicated its new Houghton Park research center. The development bears out earlier predictions about glass research (*CW, June 25, '55, p. 70*). Corning tags Pyroceram as the "greatest technological advance in glass research" since the discovery of Pyrex heat-resistant borosilicate glass.

The process starts with a special formula glass in which undisclosed nucleating agents are incorporated. The material is formed into shape, then treated further to cause the glass to crystallize. The crystallization brings on a whole new set of significant properties (hardness greater than high-carbon steel, lightness less than aluminum, strength up to nine times that of plate glass).

One of Pyroceram's advantages: before it's crystallized, it's treated like any other glass. That means it can be readily formed into complicated shapes.

•

Britain's Calder Hall nuclear reactors are still controversial. The reactors (*CW, May 25, p. 58*) ran into criticism at a conference in Tokyo because of radiation-induced distortion of metallic fuel elements. The Tokyo conference was organized by American and Japanese industrial atomic energy firms.

Last week, a government spokesman answered the criticism before the House of Commons. Said he: "The reactors at Calder Hall have gone into operation more smoothly and with far less trouble than is normally experienced in starting up a conventional power plant. And the reactor system continues to show great potentialities for further development."

•

Trimethylol phenol is the newest polyol. It's being offered in sample quantities by Bakelite. The firm feels the newcomer has a big

future in coatings, adhesives, resins, will sell it for about 35¢/lb. as a 70% solution in water.

•

Stanford Research Institute's government contract to screen cancer chemicals (*CW, May 18, p. 84*) has been signed. It's for $450,000 (instead of the expected $500,000) and will be undertaken in collaboration with Sloan-Kettering Institute.

The program will be divided into three phases: one group will synthesize new organic compounds; another will analyze to verify composition; the third will prepare them in quantities for tests at Sloan-Kettering and elsewhere.

Five others have received similar contracts: Microbiological Associates (Bethesda, Md.), Wisconsin Alumni Research Foundation (Madison), Southern Research Institute (Birmingham, Ala.), Hazelton Laboratories (Falls Church, Va.) and Arthur D. Little, Inc. (Boston).

•

A third oral drug to control diabetes has passed its first test. N′-β-phenethylformamidinyliminourea (DBI), developed by U. S. Vitamin Corp., was discussed at the American Diabetes Assn. last weekend. First clinical studies found it to be a potent drug for treating diabetes and indicated that side effects (some nausea and, in a few cases, vomiting) can be controlled for the most part by regulating the dosage.

Lilly halted tests on its BZ-55 (N-1-sulfanyl-N-2-n-butyl carbamide) last fall (*CW Technology Newsletter, Nov. 10, '56*), because of side effects. Upjohn is going ahead with its Orinase (1-n-butyl, 3-*p*-tolyl) sulfonyl urea.

•

First official report on Hungarian production of titanium from red mud has been made. About 10,000 tons of the red mud are produced every year as a by-product of Hungarian aluminum manufacture. The mud contains iron and about 2% titanium dioxide.

The Metals Industries Research Institute (Magyarovar) now claims "greatly improved manufacture of titanium from red mud." The Hungarians don't disclose how they do it. But their process is thought to involve concentration to a secondary mud containing 20-22% titanium dioxide, then reduction in a Kroll-type operation. Final tests on the process are due to be completed this year.

•

A chemical to combat radiation effects on humans? There has been some skepticism expressed as to the practicality of the idea. But London's *Sunday Graphic* tabloid reports that British scientists are working on one that has been found effective in mice. Next step: measuring its toxicity on humans.

Dowicide preservatives prevent product breakdown

. . . protect quality in canned products

In tests on two emulsion liquid floor wax samples stored for two weeks at 98° F., one sample remained pure, liquid and uniform. The other became putrid, viscous, discolored and completely unusable, due to bacterial action.

The two samples were identical except for one important difference: the one *not* affected by bacteria had been treated with a Dowicide® preservative. The dual job of protecting quality and prolonging the effective life of canned products through control of bacteria and fungi is an important one. And it's one that Dowicide preservatives do extremely well.

If your product is anything short of perfection, one of fourteen Dowicide preservatives may possibly improve it. Let our laboratories help you choose the right one. For specific information, return the coupon to us. THE DOW CHEMICAL COMPANY, Midland, Michigan.

THE DOW CHEMICAL COMPANY,
Dept. DP 401A, Midland, Michigan

Please send me further information on the uses of Dowicide preservatives for:

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FIRM_____ ADDRESS_____

CITY_____ STATE_____

☐ paint ☐ pulp and paper ☐ ceramics

☐ adhesives ☐ cutting oils ☐ petroleum

☐ building materials ☐ other (specify)_____

YOU CAN DEPEND ON DOW

Credit executives' meeting finds time ripe . . .

For Tougher Credit Terms

Are fundamental changes in credit terms coming in the chemical industry? That's the question chemical credit men are pondering this week as they return from the recent 61st annual congress of the National Assn. of Credit Men, at Miami Beach.

At an earlier meeting in February, proposals for tougher credit terms were noticeably lacking.* But this time, CHEMICAL WEEK finds strong support developing for various types of drastic action.

Spurring the harder attitude are indications of further increases in the average age of accounts receivable. Only a handful of the 40 at the chemical industry meeting reported "no change" or an improvement in collections. Because of the payments slowdown, one big chemical firm estimates that it has $8 million less in the till now than it had a year ago, although sales have risen.

That's why some credit departments are talking about formalizing long terms, setting up discount price structures, and increasing prices accordingly.

Sampling of opinion:

• Discount price structures, indicated the top credit executive for a well-known Midwestern manufacturer, are "acceptable" to him, if large enough (8-10%). Only a large discount, he feels, would stimulate prompt payment. Price increases could be made to cover the discount—net effect would be that the prompt-paying customer would get the current market price.

• The general credit manager of a large Eastern producer suggested that the "time has come to be realistic. We should . . . consider changing our standard terms to 60, 90 or 120 days, with suitable compensations in pricing. The situation in plastics is beyond control."

• Thorough checking of customer claims that "your competitor is giving me twice the payment time" was strongly recommended by the assembled credit men. One said he caught a large automobile producer fibbing on such a claim.

• Many delegates want top management to realize that the credit department's collection policy is determined by the sales organization and to some extent by production demands. Payments cannot be improved, they say, unless a much tougher top-management stand is adopted.

Such attitudes don't necessarily mean that a revolution in chemical industry credit terms is in the making, or even that credit-caused price boosts are around the corner. Many credit executives voiced staunch opposition to "realistic, long terms" and discounting. And sales departments will probably vigorously oppose such moves. The real significance is that pressure for tougher credit is developing, that management will soon have to decide upon courses of action.

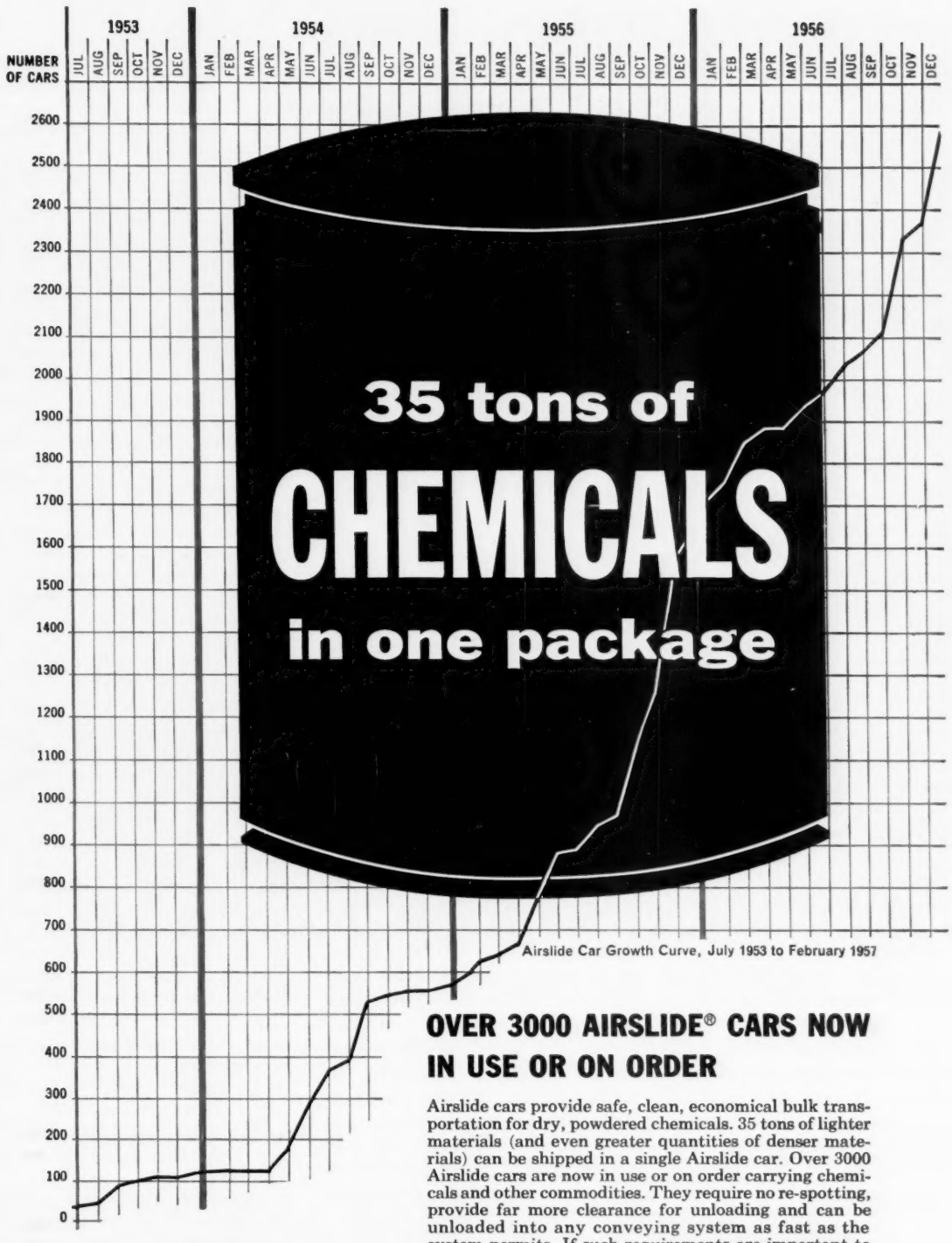
Foreign Scene: Afternoon sessions turned attention from domestic to foreign problems. Chemical credit men spotted these developments:

• **Venezuela:** The country is enjoying a great boom as oil, iron and other mineral resources are beginning to be developed. Yet, payments from Venezuela are lagging. That's because currency is short; handsome profits can be made on short investments. Debtors invest their funds, make creditors wait. Sight- and time-draft terms are commonly used for exports.

• **Egypt:** There are many restrictions on imports. Generally, the economy is in poor condition. Letters-of-credit terms are in wide use.

• **Israel:** The Suez crisis has impeded economic development, and only loans, war reparations and private

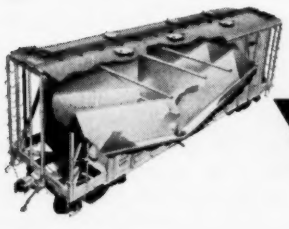
*Exception: One company announced that it was investigating the effect that charging 5% interest would have on speeding up collections from slow payers.



Airslide Car Growth Curve, July 1953 to February 1957

OVER 3000 AIRSLIDE® CARS NOW IN USE OR ON ORDER

Airslide cars provide safe, clean, economical bulk transportation for dry, powdered chemicals. 35 tons of lighter materials (and even greater quantities of denser materials) can be shipped in a single Airslide car. Over 3000 Airslide cars are now in use or on order carrying chemicals and other commodities. They require no re-spotting, provide far more clearance for unloading and can be unloaded into any conveying system as fast as the system permits. If such requirements are important to you, write today for full information about General American's new Airslide car.



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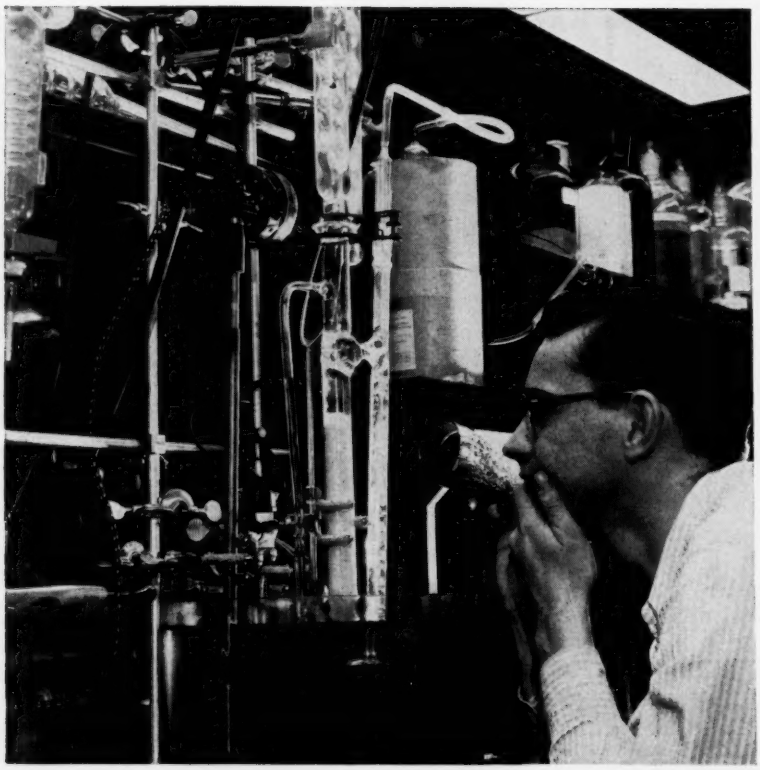

COMPATIBILITY

. . . in phenolic resins

Their physical and thermal properties are not the only useful attributes of Durez phenolic resins. They also exhibit chemical characteristics that make them valuable in an interesting diversity of end-products.

In the compounding of nitrile rubber stocks, for example, the compatibility of certain resins with the rubber contributes to vulcanization with very substantial gains in strength, abrasion resistance, and resistance to attack by oil and chemicals. In another field the compatibility of Durez terpene phenolics with vegetable and synthetic waxes improves the performance-cost ratio of emulsion finishes. Brake linings and various industrial components serve better and longer because the resins in them are unaffected by oil and grease.

These and other characteristics make Durez phenolic resins useful as impregnants, bonds, coatings, and laminating agents. Their applications range from shell molds for metal castings to dense, strong board manufactured out of wood particles.

Can *you* use the mechanical strength of phenolic resins, their self-insulating properties and resistance to humidity, heat and cold? Our long experience in research and production is at your service.

DUREZ® Phenolic Resins that Fit the Job

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HOOKER ELECTROCHEMICAL COMPANY
906 Walck Road, North Tonawanda, N. Y.

HOOKER CHEMICALS PLASTICS

Export Agent: Omni Products Corp., 460 Fourth Avenue, New York 16, New York

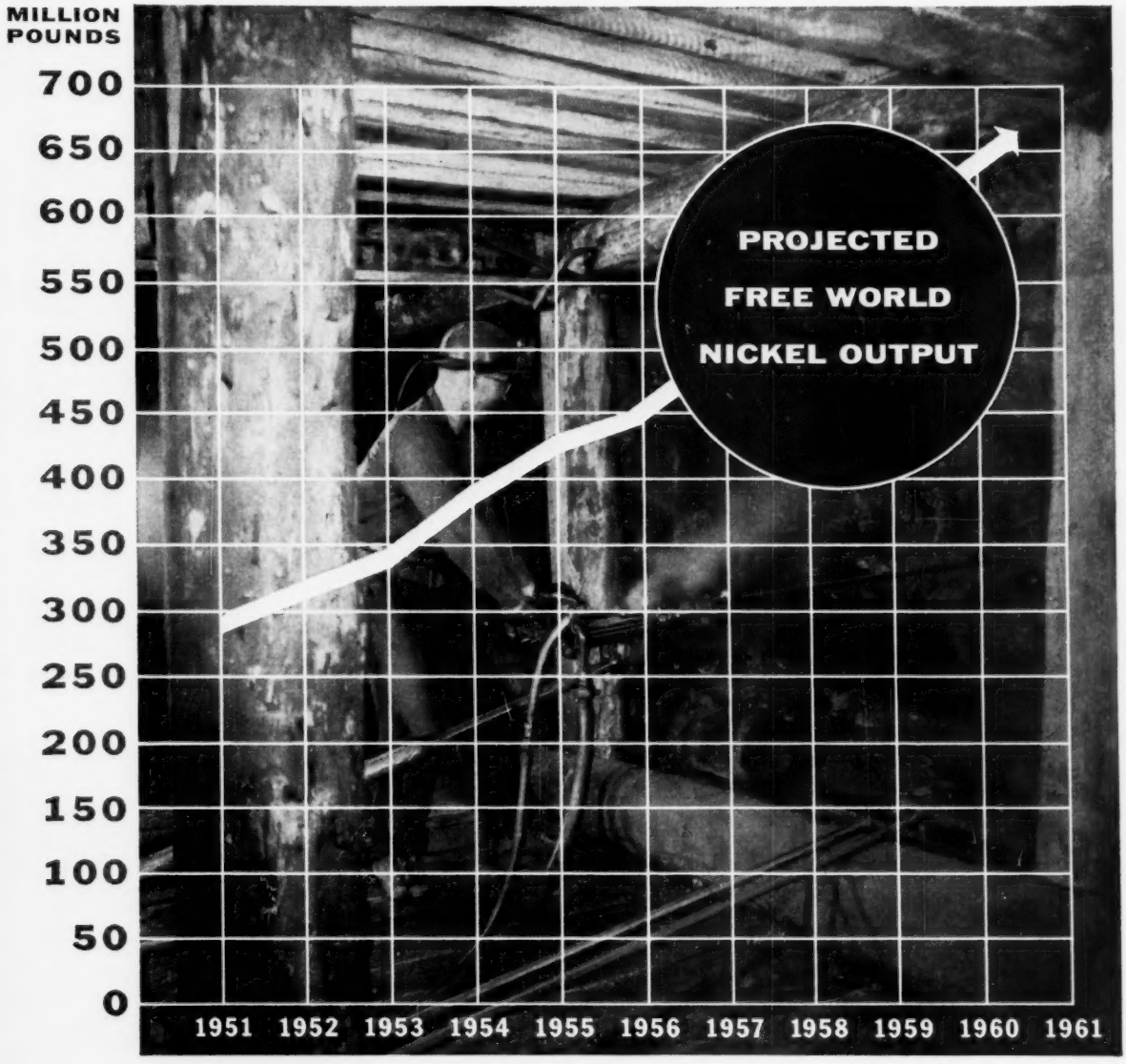
gifts are preventing a trade deficit. Like Egypt, Israel is a "letter of credit" market.

- **Saudi Arabia:** It is now considered a "favorable market" with good future prospects. Although letters of credit are usually insisted on, more liberal terms are occasionally granted.
- **Iran:** This nation has been little affected by the Suez crisis. Trade is strictly regulated; sight-draft terms are in wide use.
- **Iraq:** Licenses are needed for imports, and permission is necessary to make currency conversions. Sight drafts and letters of credit are present terms.
- **Turkey:** The country's economic situation is near hopeless, and there's little prospect of improvement in the immediate future. Extreme caution has been advised on credit extension.
- **Greece:** Payment situation is generally good but is snarled in elaborate rules and red tape. Sight and time drafts are being used extensively.
- **Mexico:** Credit situation is similar to that in the U.S., and generalizations are hard to make. "Open account credit" is widely employed, and sight drafts are not suggested because of border delays.

Two topics of keen interest to chemical credit men—Colombia and East-West trade—were briefly explored at a general luncheon meeting. From the director of the International Bank for Reconstruction and Development, Louis Machado, came a prediction that Colombia would make good on its "60/40" plan to pay creditors. And from E. E. Schnellbacher, director of the Office of Intelligence and Services, U.S. Bureau of Foreign Commerce, came the statement that the embargo on shipments to Red China is discussed in government circles on a "day to day" basis. He cautions: "Don't expect an immediate change" on federal export restrictions to China and East Europe.

Legislation: Resolutions passed at the Miami Beach convention were well received by chemical credit managers present. Three of special importance:

- Support for a federal law that would give private business a better break in bankruptcy proceedings. Now, all tax claims take precedence over claims of general creditors. NACM proposes that only taxes becoming legally due within one year of the



Another 50% advance in nickel industry's production capacity

Paced by Inco-Canada's new developments in Manitoba, producers put 1961 Free World nickel output at 650-675 million pounds a year—up 130% over 1951

In 1951, the nickel industry of the *Free World* produced about 290 million pounds of nickel.

Last year, the over-all output of the industry set a new record high of 450 million pounds.

This was an expansion of more than 50% in five years: a substantial production boost that indeed benefited industry, but only after vital defense and government stockpile needs were given preference.

New Inco-Canada developments help set new goals

Right now Inco-Canada, with years of exploration behind the project, is pushing construction at its new Manitoba mines: developing in the far North a new, big-tonnage nickel-producing area.

In Ontario, at the same time, Inco-Canada is continuing to expand its Sudbury capacity.

In 1961, this should lift Inco-Canada's nickel output to 385 million pounds a year. A hundred million more than in 1956!

With the steadily increasing capacity of all *Free World* producers, in the next four years nickel production should be lifted to the all-time high of 650-675 million pounds a year.

With 1961 capacity anticipated at more than twice what it was in 1951—and with continuing exploration—nickel users are assured of more nickel in their future.

The International Nickel Company, Inc., New York 5, N.Y.

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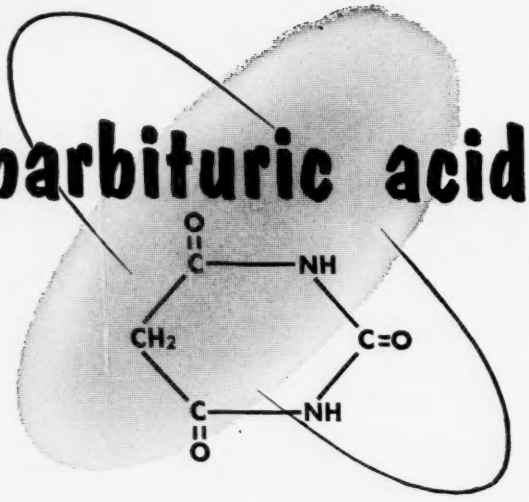
INCO **International Nickel**

The International Nickel Company, Inc., is the U. S. affiliate of The International Nickel Company of Canada, Limited (Inco-Canada)—producer of Inco Nickel, Copper, Cobalt, Iron Ore, Tellurium, Selenium and Platinum, Palladium and Other Precious Metals

KAY-FRIES

barbituric acid



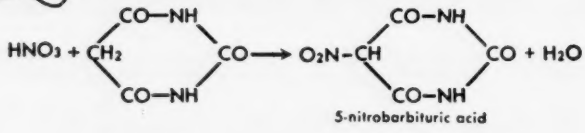
PROPERTIES

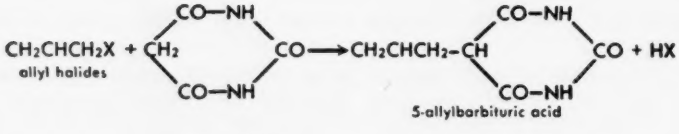
molecular weight: 128.09
melting point: decomposes at 245°C±
solubility: soluble in hot water, slightly soluble in alcohol, soluble in ether.

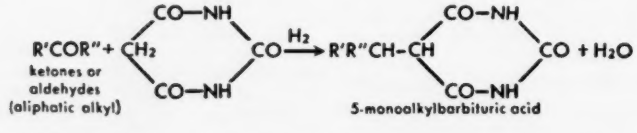
KAY-FRIES SPECIFICATIONS

color: clean white to yellow white powder
purity: 98.5% min. **chloride:** .020% max.
loss on drying: .5% max. **ash:** 1.00% max.

TYPICAL REACTIONS







TECHNICAL DATA BULLETIN AVAILABLE

KAY-FRIES CHEMICALS, INC.

180 MADISON AVE., NEW YORK 16, N. Y., MURRAY HILL 6-0661

beginning of bankruptcy proceedings get preferential treatment.

• Amendment of federal tax laws to force the government to file notice of federal tax liens before such liens would become valid against material and equipment liens. Suppliers now have no means of knowing if government tax liens exist against accounts

• Renewed efforts to get federal and state legislation outlawing "non-par" bank clearances. Some 10% of the nation's banks still discount (upwards of $1-1.25/$1,000 face value) check payments. The practice is legal in 18 states and prevalent mainly in the South. Texas particularly, is a trouble spot for chemical companies on that score.

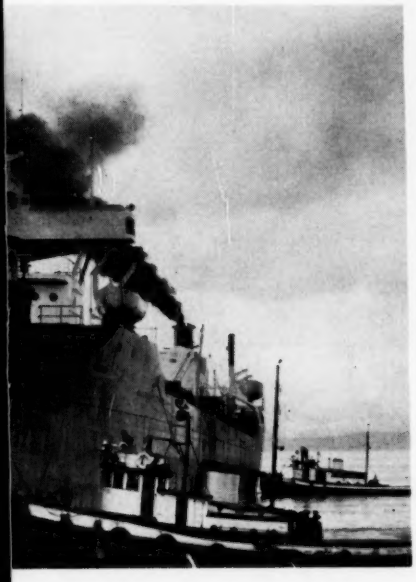
Action by Congress on the proposals is considered unlikely this year, but will probably be considered in 1958. Congressional action would ease some collection problems. But the real poser —how to speed collections— remains to be solved.

Louisiana Methano

Taking dead aim at large-volume markets for methanol, Commercial Solvents Corp. recently placed the tanker *Texan* on the oceangoing trail to Western sales. The ship will deliver bulk cargoes of methyl alcohol to distribution terminals located in the Portland, Tacoma, Los Angeles and

DATA DIGEST

- **Coal products:** New revised edition of chart shows principal products and product types that are derived from coal. Emphasis is on chemicals. Barrett Division, Allied Chemical & Dye Corp. (New York).
- **Protective linings:** Booklet describes application of linings and coatings to distribution equipment. Metalweld Inc. (Philadelphia).
- **Release agent:** Technical bulletin discusses methods of using Sonite, a special-formula release agent for separating epoxy or other resin castings from plaster, gypsum cements, wood, metal and plastics. Smooth-On Mfg. Co. (Jersey City, N.J.).
- **Filter paper:** Illustrated and comprehensive 24-p. brochure discusses fundamentals of solid-fluid separation, gives specifications, description, suggested applications and performance characteristics for many different paper grades. Eaton-Dikeman Co. (Mt. Holly Springs, Pa.).

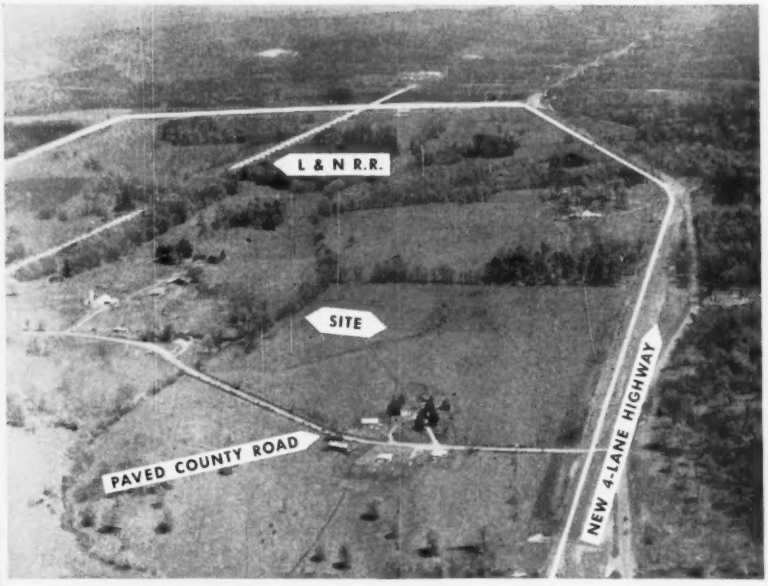


oes West By Sea

San Francisco areas. The *Texan* is a converted, 20,000-ton C-4 cargo ship with a total liquid cargo capacity of between 7-8 million gal. CSC has booked more than a million gallons of that capacity for methanol. Cargo will be loaded at the company's Sterlington, La., plant.

YOU'D BE A SITE BETTER OFF-

NEAR BIRMINGHAM, ALABAMA!



PLANNING TO LOCATE? CONSIDER THE ADVANTAGES OF BIRMINGHAM'S PINSON VALLEY AREA

- **EXCELLENT TRANSPORTATION**—Main-line L & N R. R.—New 4-lane highway—Class 1 airport.
- **RAW MATERIALS**—Centered in one of the world's largest sources of supply of iron and steel and similar fabricated materials; also such basic resources as coal — limestone — dolomite — iron ore — timber, etc.
- **ALL REQUIRED UTILITIES AVAILABLE**—Electric power, natural gas, industrial water, sanitary sewerage.
- **MANPOWER** needs can be amply met from substantial reservoir of reliable, available help.

Business, local and state governments are all friendly to new industry . . . and . . . you may rely on L &N's Industrial Development Department for confidential assistance in resolving your location problem.

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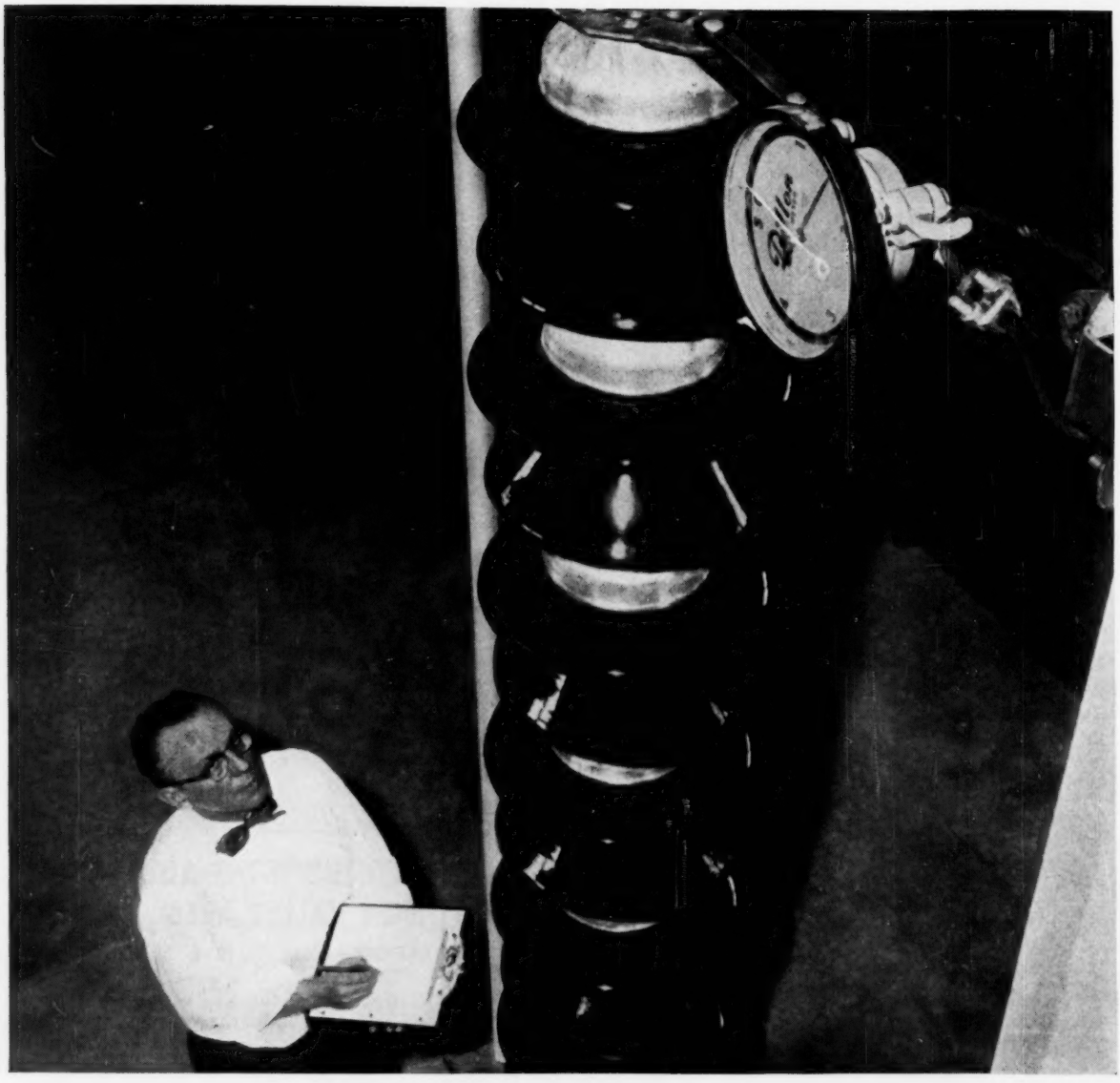

How Water Conditioning helps Victor make better insulators

Big, high-voltage insulators have to be perfect. They're expensive to make. And water is an important ingredient in the clay mix and in the glazes. So, when Victor Insulator Division's research lab found that mineral salts in the water affected the quality of the porcelain, they got busy.

A Permutit ion-exchange demineralizer was installed to remove practically all mineral salts from their city water.

Results: Easier working of the clay mix which provided better dimensional control; improved thermal resistance, hardness and density; higher puncture values; better tension, torsion, cantilever and impact values. As Victor puts it, "the biggest improvement in high-voltage porcelain in 20 years."

Look again at the use of water or water solutions in *your* plant . . . for washing, plating, processing, etc. Chances are that there's an impurity you should be rid of . . . or a valuable element you want to save. In either case, ion exchange can probably take it out. We'll be glad to help you find the best method. The Permutit Company, Dept. CW-6, 330 West 42nd St., New York 36, N. Y. or Permutit Company of Canada, Ltd., Toronto 1, Ont.

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Market Newsletter

CHEMICAL WEEK
June 1, 1957

At week's end most acetone sellers were still uncertain about following Eastman Chemical in raising prices ½¢/lb., effective July 1. Measure of the industry's indecision: four other major producers tell *CW* they're "watching the situation very carefully" or have the matter "under advisement."

There's apparently no disagreement, though, with Eastman's reasoning behind the price hike. Explained Frank Magoffin, chemical division sales manager, at the company's annual sales meeting in Kingsport last week: "Cost of raw materials, labor, transportation and marketing have steadily increased," but selling prices of chemical products have either remained the same or declined.

Eastman will also raise prices ½¢ on isobutyl alcohol and some acetate esters, but whether or not its new 8½¢/lb. acetone tag for tank-car quantities becomes the industry standard isn't likely to be known until later this week.

Back to '54 levels go prices of synthetic camphor tablets. Chas. L. Huisking has reduced price of the tablets (made from Du Pont crude synthetic camphor) 5¢/lb.—bringing the range down to 85-87¢/lb., depending on quantities. This is the same schedule in effect prior to the 5¢/lb. increase posted in late '54 (*CW Market Newsletter, Dec. 25, '54*). Reason for the current cut stems from some keen competition from imported natural camphor tablets.

Prices of synthetic refined powered material, at least for now, aren't affected by the decline.

•

Price increases will taper off during the rest of the year, but the leveling won't begin to really show until after the start of the third quarter. That's the consensus among market analysts. Thus, upward revisions effective July 1 that are now being posted on items that haven't been advanced in years are still the order of the day.

Aluminum sulfate is one such product. American Cyanamid late last week announced that its material would cost more July 1. The advances boost the tag on Cyanamid's commercial grades by $4/ton on dry alum and by $2.60 on liquid alum. They're the first increases in four years, says the company, despite "steadily rising manufacturing costs."

Here are the alum prices that will be raised: commercial-grade material, c.l. lots, $1.80/cwt.; ground alum (bags, c.l.), currently quoted at $37/ton at the works; and lump material at $40. Liquor is $33/ton, c.l., f.o.b. plant.

•

Users of acrylic sheet will get the benefit of the "lowest prices at which standard sizes of first-quality cast acrylic sheets have been offered

for sale in this country." Price reductions ranging up to 20%, effective June 1, are announced by J. B. Henriques (New York), exclusive distributors in the U. S. for Perspex acrylic sheet made by the Plastics Division of Imperial Chemical Industries Ltd. (England).

•

Ethyl parathion is again in production at Monsanto's Nitro, W. Va., plant. Output of Niran insecticide was halted for five weeks following the April 16 explosion that cost eight lives and destroyed production facilities for methyl parathion, a related compound.

Meanwhile, construction of new Niran and methyl parathion facilities is under way at the firm's Anniston, Ala., plant. Capacity of the new unit (scheduled for completion late this fall) is not revealed, but is said to "considerably exceed" the former output at Nitro. The area formerly occupied by the methyl parathion unit at Nitro will be put to other plant use when the Anniston plant takes over Niran production.

•

A million pounds/year market for lithium metal by 1970 was predicted, last week, by Marshall Sittig, president of the American Lithium Institute.

Speaking in Los Angeles at the Regional Reactive Metals Conference (of the American Institute of Mining, Metallurgical & Petroleum Engineers), Sittig forecast a promising future for the alkali metals as a group, and for lithium and sodium in particular.

Both metals, he said, will find large markets in the synthesis of new metal organics used in polymers, antiknocks, high-energy fuels.

Lithium looks exceptionally promising as a coolant for aircraft nuclear propulsion plants and as a stereospecific catalyst for plastic and elastomer manufacture. Sodium, now used in quantities exceeding 250 million lbs./year, will prove useful in the production of such reactive metals as zirconium, titanium, beryllium.

SELECTED PRICE CHANGES — Week Ending May 27, 1957

DOWN

	Change	New Price
Citronella oil, Ceylon, cns., dms.	$0.05	$0.80
Citronellol, bots., dms.	0.10	3.60
Geranyl acetate, cns.	0.10	2.80
Japan wax, cs.	0.03	0.40
Stannic oxide, dms., dlvd. E.	0.015	1.04
Tin metal (Straits)	0.025	0.98

All prices per pound unless quantity is stated.

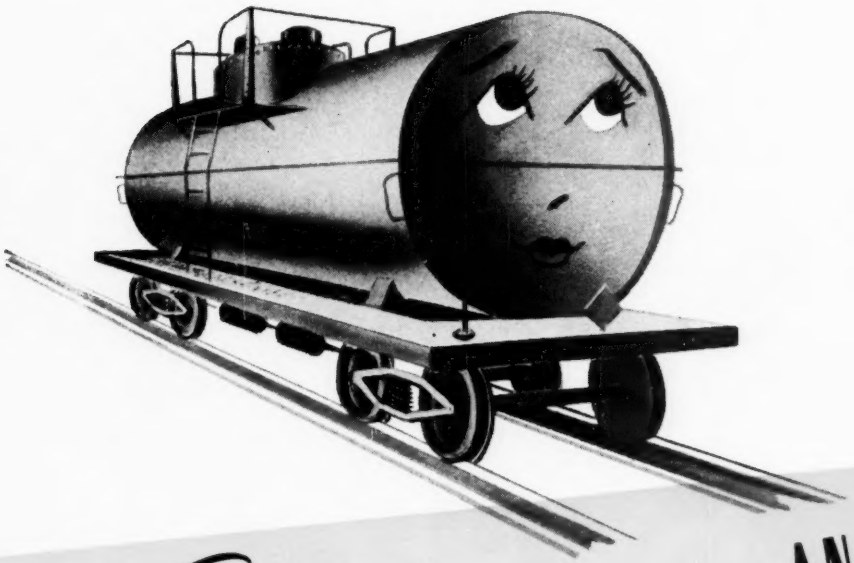

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PHOTO: STONE CONTAINER CORP.

Highlighting increasing ink usage in packaging are these colorfully decorated paperboard boxes.

Packaging Sets a Fast Pace for Printing Ink Growth

TALK about printing inks and their future, and you'll soon be talking packaging—color packaging in particular. The $14 billion worth of packaging materials currently used in the U.S. already take an estimated $100 million worth of inks—about 40% of the entire $250-million U.S. printing ink output. And it is to the packaging industry, now growing at a $2-billion/year rate, rather than the publishing industry, that ink makers look for growth.

Ink sales seem sure to surge with the packaging boom. Swelling population and the growth of self-service shopping is creating a strong demand for attractive packaging. The emphasis on color is likely to be intensified, some ink makers believe, when color TV makes its big impact on the public—and on color-conscious advertisers.

For the most part, the ink industry is ready for any boom that might come. It has the production facilities, the distribution setup, and is technologically prepared to supply the types of inks required. Here's an up-to-the-minute picture of the industry, what is happening in it, and what you can expect to see:

Three-Quarters of a Million Recipes: There are now about 208 ink makers in the U.S. who sell their inks on the open market. Other ink manufacturers—e.g., printing firms, packaging outfits—also formulate inks, but only for their own use. According to the National Assn. of Printing Ink Makers, 750,000 separate formulations of ink are made up yearly. About the closest thing to a standardized ink is news ink—of which 28 different kinds exist.

Biggest in the field, dollarwise, is Interchemical Corp. (New York), said to have 30-40% of the business. Sun Chemical (due to merge soon with Bensing Bros. & Deeny) and Sinclair & Valentine (both New York) probably are quite close for second. California Ink (San Francisco), Frederick H. Levey (New York), and Howard Flint Co. (Detroit), are probably next largest.

It's difficult to rank ink companies, because ink prices range from 5¢ to $5 a pound. Volume of business in pounds is not much of a yardstick to volume in dollars.

National vs. Local: About 70% of the national market is split up among the few companies listed. "Local" companies handle the remaining business. The big companies are built on high-volume production of inks for packaged consumer items such as soap and cigarettes.

By contrast, the smaller ink firms concentrate on custom-making inks in small lots for such uses as color ads in local newspapers, direct-mail brochures, business forms.

While some printing houses and big carton makers formulate their own ink, the one really basic maker of inks for captive consumption is American Can Co., which acquired ink-making facilities of Kienle & Co. (Brooklyn) over a year ago.

Imports pose no threat to American ink makers, nor do they figure to do so in the future. Except for some special inks, small-quantity items, almost all inks used in the U.S. are made here.

Exports, on the other hand, represent a growing outlet for U.S. inks. Because of a hefty ink industry in England, France and Holland* very little ink goes to Europe. But South America and the Far East are good U.S. customers.

Where They Go: There are no accurate figures on the exact size of the domestic market. The gross-sales figure heard most often is $250 million/year†.

Packaging is the No. 1 dollar customer for printing inks. It is estimated to account for about 40-45% of total sales. Magazines account for 25%. Commercial printing—e.g., catalogs, business forms, posters—accounts for another 20%. This work is usually done in job printing shops.

Although it is consumed in extremely large volume (about 600,000 lbs. used daily in the U.S.), news ink (newsblack) represents only about 10% of ink dollar sales. Some 17 different kinds of printing, such as lithography, rotogravure, letterpress, silk screen, use specialized inks,

*The Organization for European Economic Cooperation lists printing ink production of its 10 member countries as 71,876 short tons in 1955 (up 12% from '54). About 10% of this is exported.

†The '54 Census of Manufactures gives this breakdown for shipment and value of printing inks: Letterpress ink totals—newsprint, 231,234,000 lbs., worth $23,918,000; book and magazine, 70,460,000 lbs. worth $29,598,000; container and label, 41,458,000 lbs., worth $31,673,000; other letterpress, 19,803,000 lbs., worth $13,837,000. Lithographic and offset ink figures were 25,938,000 lbs., worth $27,970,000; gravure, 90,839,000 lbs., worth $18,512,000; textile printing, 17,371,000 lbs., worth $10,402,000; other printing (including silk screen and stencil inks), 14,106,000 lbs., worth $9,320,000; miscellaneous, $7,204,000. Total value: $172,434,000 (up from $109,402,000 in '47).

How Much They Use

The tabloid *New York News*, with the biggest newspaper circulation in the U.S., consumes some 11.5 million lbs. of ink each year—about 8 million lbs. of newsblack, 2.5 million lbs. of gravure ink (both black and colored) and 2 million lbs. of colored inks. About 78% of this ink goes for the daily papers—84-page issues (average); circulation: over 2.1 million. The rest is used for the Sunday editions, when circulation jumps to 3.6 million; average issue: 196 pages. The *News*' daily delivery of newsblack, about 15,000 lbs./day, is brought in by tank truck. It keeps about a 2.5-week supply of newsblack on hand at each of its two plants.

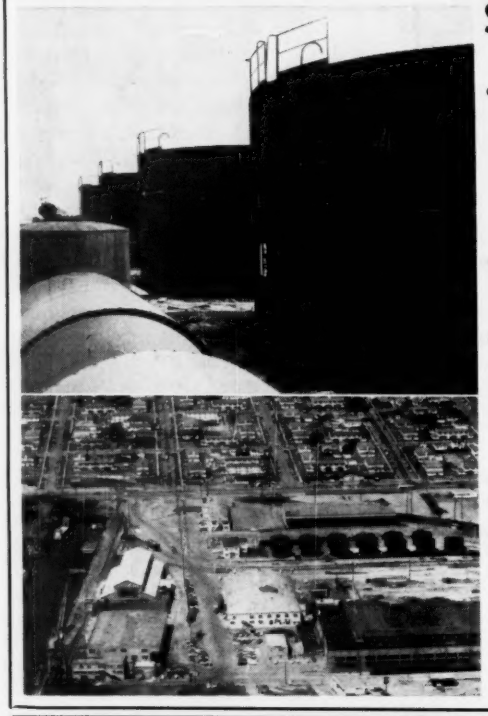
The *New York Times* uses even more ink. Its daily issues—circulation: about 550,000—demand more than 24 million lbs. of newsblack in a year; Sunday issues sell 1.1 million copies, take another 3.5 million lbs. of newsblack. Total requirement: 27.5 million lbs. of ink a year. The *Times* does not buy color inks; it contracts with outside firms for its rotogravure and color work. Like other major publications, the *Times* buys its ink on contract, with the paper's mechanical department specifying the type and quantity of inks required. The *Times* has three major ink suppliers.

Chemical Week, on the other hand, uses about 750 lbs. of black ink, 225 lbs. of color inks for its 35,000 copies each week.

American Telephone & Telegraph estimates that 4.4 million lbs. of ink go into the various U.S. telephone directories. Illinois Bell says the 1956-57 Chicago directories required nearly 534,000 lbs.—234,350 lbs. for the 2,148-page alphabetical edition; 256,067 lbs. for the 2,335-page Redbook, 42,764 lbs. for the 1,488-page suburban directory.

The U.S. Bureau of Engraving and Printing (which makes its own inks) used 3.5 million lbs. of ink last year for stamps (which it sells to the Post Office), bonds, securities, etc. Government Printing Office figures are not available.

BULK CHEMICAL TERMINAL for domestic distribution and marine shipments through San Francisco Bay



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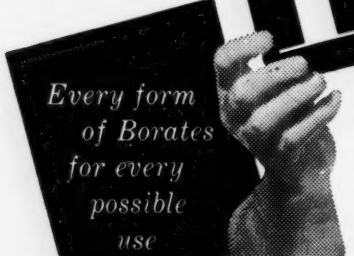

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The great diversification of B_2O_3 sources in our product line-up may surprise you. Here you'll find Borates, Concentrates, Boron Compounds, Ores, Elemental Boron, and *organic borates* in the form of Boric Acid Esters... As *specialists* in the borate field for more than fifty years, our mines and refinery are geared to meet your particular requirements. Call upon us for technical advice without obligation.

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are printed on surfaces ranging from heavily glazed paper to newsprint, blotter, posters and tin cans.

Lard and Syrup: Ink varies in composition from waterlike liquids to tarlike solids. In viscosity, offset ink might be likened to lard, letterpress ink to honey, gravure or flexographic (aniline) ink to water. Most all have this general makeup: pigment, vehicle or varnish, and extenders or driers. Newsprint inks are about 85% mineral oil, 15% carbon black. Linseed oil, thickened by heat, has been the most widely used vehicle in the past but is being gradually supplanted by synthetic resins.

Container Variety: Inks are shipped in containers ranging from 1-oz. tubes to tank cars. Tubes are for inks used in making proofs; 1-lb. cans are common for the letterpress printer; 5-lb. cans for the commercial printer; 10-lb. cans for the lithographer; 3-5-gal. buckets for newspaper color; and tank cars for newspaper black. (Since inks are designed for specific jobs, many small-lot purchases result. If a printer is in a metropolitan area, he'll usually underorder, count on getting same-day service for additional supplies.)

Inks are usually mixed to order; hence, very little stock is maintained by ink makers. Most ink houses keep about 100 standards in stock. Raw materials kept on hand by ink makers equal about a month's sales volume.

Prices depend on quantity, use, color, etc., vary from about \$1 to \$8/lb. Inks used in carton printing cost less, generally vary from about \$1.25 to 55¢/lb. Almost all sales are direct from the ink maker. A few jobbers sell to the small job shops.

Putting in the Color: Major suppliers of pigments to the printing-ink industry in the U.S. are Du Pont, Imperial Paper and Color Corp., Sherwin-Williams, American Cyanamid, and Hilton-Davis Chemical Co. Interchemical, Sinclair & Valentine and other big ink makers make most of their own organic pigments but must go outside for inorganic types. Only a small quantity of these pigments is imported.

Some of the large-volume pigments used by the printing ink industry are lithol reds, eosin reds, peacock blue and chrome yellows. Vat-dye pigments are used in very small quantities. There seems to be a trend (which shrinking profit margins may stem)

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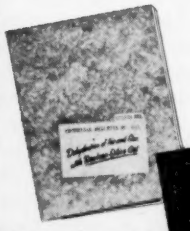
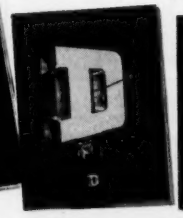


Davison Silica Gel for the dehydration of air and gas.

Syloid® 308 . . . lacquer flatting agent.



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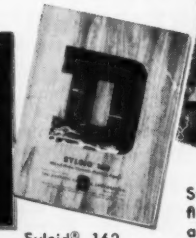

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LAB REPORT

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Note: The compound is compatible with additives such as perfumes and sequestering agents.

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toward increasing use of phthalocyanines and other relatively high-cost, high-quality pigments.

Proportion of pigment in inks varies according to the type of ink, but a range of 5 to 45% is representative of the extremes met in formulating. About 20-30% is fairly common. Du Pont estimates that 15-20% of all dry colors are used by the ink industry.

Color Boom: One of the big trends in the ink industry in recent years has been the increase in use of color inks. In '39, the total market for color ink was one-quarter of what it is today. The two big growth factors have been the increasing use of color in packaging (to catch the impulse buyer's eye) and color advertising in newspapers and magazines—50% of all magazine ads now use color. In '39, newspaper color was limited almost entirely to the "comics" and Sunday supplements.

But packaging is the main spur. One company told *CW* that sales for printing on corrugated boxes in '39 were for 90% black ink, that they're now 90% color. Firms are looking for even better days in this field as a result of Samuel M. Langston Co.'s (Camden, N. J.) recent development of a four-color press for printing on corrugated boxes and cartons. Packaging in plastic gets color, too. About 500 times as much polyethylene is now printed with color ink as with black.

A trend-stopper may be the rising cost of using colors. Each color needs separate impressions, and this hikes labor charges—a big factor in printing costs. Thus, some customers are cutting back their four-color work to two or three colors. This has also affected color selection. Some colors —yellow, for example— are low in "mileage" (a term involving capacity), and more ink must be used per page.

Cool on Fluorescents: Fluorescent inks get a cool reception from many printers. Some objections to their use: they require care to prevent contamination in ink reservoirs in presses; they fade quickly; relatively large amounts are needed to cover a surface, and few colors are available.

Switzer Bros., Inc. (Cleveland), one of the pioneers in fluorescent inks, and holder of the Day-Glo trademark, is more sanguine in viewing the future of the fluorescent inks.

For one thing, the company just last week announced the development of fluorescent lithographic inks in the same colors that have up to now been used only in silk-screen and letterpress work. The company says the ink will retain brightness for many months. It expects the new development—despite a price of about twice that of conventional or litho inks—to double the market for fluorescent ink. Small quantities of the new inks go for $4.50 to $9/lb.; large quantities, from $3.50 to $6.70.

Film Problem: One of the big problems facing ink makers has been the swift development of various packaging films. Prime problem is a shortage of time in which to do proper formulating. Another difficulty is creating inks that won't be fire hazards (volatile solvents present a flammability danger that some printers aren't prepared to cope with).

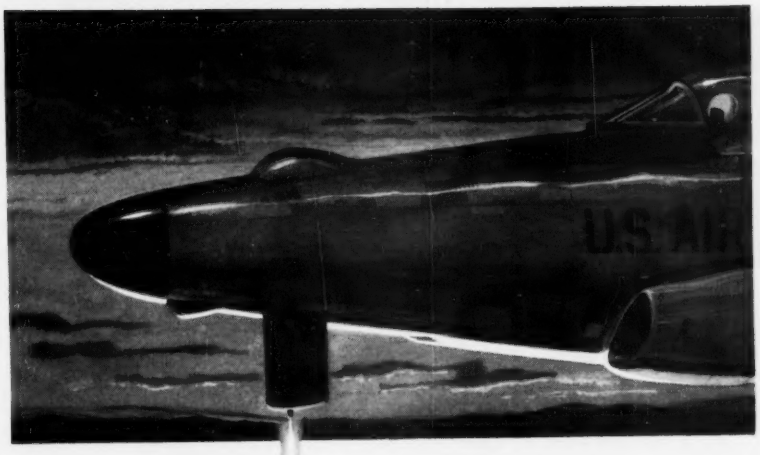
On the whole, though, printing ink makers have pretty well kept pace with film developments. Packaging makers have abetted this progress. Dobeckmun Co. (Cleveland), for instance, develops its own inks, is printing as many as seven colors on thin film packages. These inks must be fast-drying without being fast-fading, require special adhesive qualities.

Printing on Mylar polyester film has offered special problems because the film is insoluble in all but rare solvents. It can and has been printed, but the process is far from perfect.

Varying atomospheric conditions have an effect on ink drying properties; inks must be tailored to account for plants that are air-conditioned, for example. Another hurdle is color matching. Says one ink maker, "The color books are never adequate. There's always someone who wants a special color. And, unless the order is for considerable volume, we can't recover the cost of making up the color."

Faster press runs have meant a never-ending search for better drying agents. Examples of these fast dryers are the heat-set inks, which are dried by flashing off volatile solvents with 400-500 degrees of heat, then chilling.

Fast-drying is also important in the flexographic inks (which are water- and alcohol-based), as well as in the moisture (or steam-set) inks, which deposit a resin from solution onto the papers. The latter type is used



Kentucky Windage at 650 MPH?

"Kentucky windage" is fine for an oldtime squirrel shooter at 60 yards. But how do you compute cross-wind allowance for high-speed jets aiming at fast-moving flank targets?

The compilation of firing tables required for cross-wind cannon firing is typical of the complex problems facing modern weaponeers. The special abilities of Thieblot Aircraft Company, a division of Vitro Corporation of America, in designing and manufacturing aircraft components and ordnance have made it a key member of the Army-Air Force team working on this difficult ballistics problem.

Thieblot's contribution was the design of a new ballistics data nose. Only a foot longer than conventional fighter noses, it carries a 20 mm. cannon with mount independent of the aircraft motion, four high-speed cameras, radar, and electronic equipment. With auxiliary ground controls this equipment "fixes" projectiles in time and space. This leads to greater protection for bombers and other combat aircraft through more accurate flank fire.

Thieblot Aircraft has also designed purge mat systems for jet trainers, a boundary layer control system, a nose-wheel steering mechanism, an inflight refueling unit, an escape reel for ditched aircraft and other equipment.

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ULTRAGRAM

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SULFRAMIN® KE LIQUID

Sulframin KE Liquid is a stable, hard-working alkyl aryl sulfonate offering these benefits to formulators:

- Clear liquid with uniform appearance and activity even at 40° F. Doesn't salt out.
- Blends easily with water, pine oil, non-ionics, diethanolamine condensates and other wetting agents. No heating tanks required.
- An excellent foaming agent:
  Foam (Ross Miles) @ 25°C 0.1% Sol. 150cc.
  Foam (Ross Miles) @ 25°C 1.0% Sol. 240cc.
- A good wetting agent:
  Wetting Draves @ 25°C 0.5 % Sol. 2-3 sec.
  Wetting Draves @ 25°C 0.25% Sol. 8-10 sec.

- ***Heavy-duty liquid detergents*** can be compounded with Sulframin KE Liquid and alkalis and phosphates in conjunction with sodium xylene sulfonate (Ultra makes SXS, too).
  Sulframin KE Liquid combines for quantity price with other Ultra products such as Sulframin AB Flakes, powders, and spray-dried Beads. Send for bulletin.

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"Alamask"

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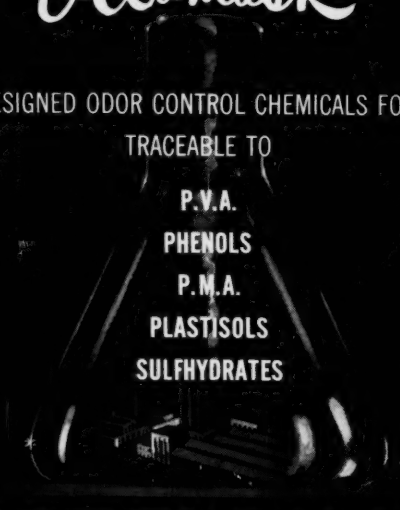

Alamask odor control chemicals reduce the intensity of a wide variety of obnoxious malodors such as these, found in both processing operations and finished products. Rhodia's technical engineers will offer specific recommendations to solve your odor problems. Samples and directions for use are available upon request.

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PHILADELPHIA • CINCINNATI • CHICAGO • LOS ANGELES • CANADA: NAUGATUCK MONTREAL • MEXICO: COMMERCIAL REKA, MEXICO CITY

SPECIALTIES

in milk cartons and bread wrappers; it is odorless.

Ink Makers' Goals: In a recent address, Maurice Adler, of California Ink Co., set these technological goals for ink makers:

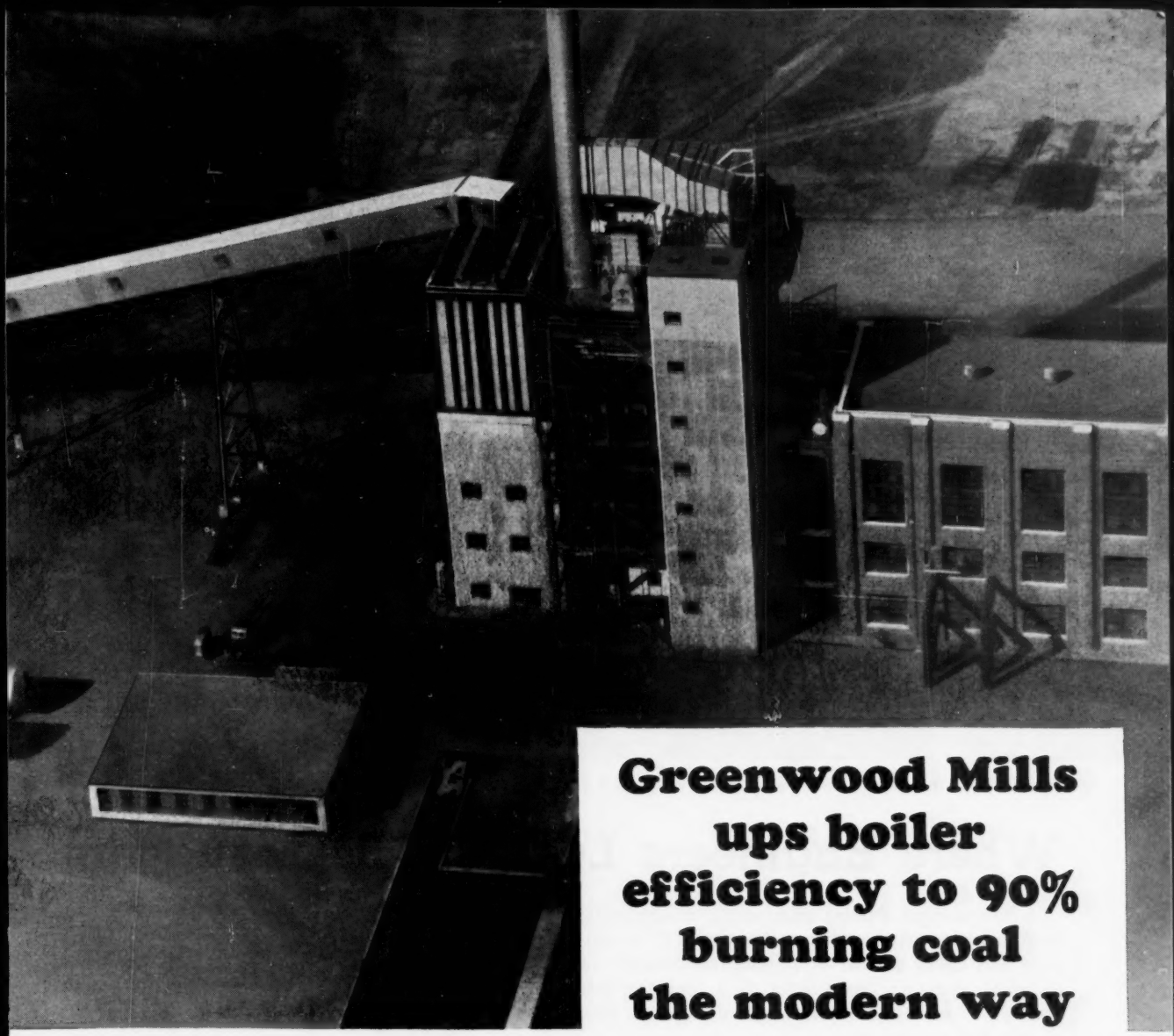
Nonsmearing inks for newspapers, stronger and brighter hues (particularly oranges and reds), better metallic inks (especially for lithographic presses), longer-lasting fluorescents, blacker blacks, more homogenous ink varnishes, inks that transfer dry from plates to paper (now a lab curiosity), nonsmudging heat-set inks, and three-color process inks with the brilliancy and clarity of the pure theoretical colors of the spectrum. He also sees the possibility of atomic energy being used to instantaneously dry conventional or modified conventional inks.

Profit Trouble: What's troubling ink makers most is declining profit. With labor and raw-materials costs going up, ink makers face the prospect of doing larger-volume business at no greater profit.

An analysis by the Printing Industries of America of the period 1950-1956 showed that, in 1950, ink represented 3% of the selling price of a printing job. In '56, the ink percentage of the over-all selling price had declined to 1.9%, not in pace with other commodities' price hikes. Largely holding down ink prices is the terrific amount of competition in the field.

Although no ink maker has said that higher prices are imminent, they will inevitably come. Reasons: raw-material prices have climbed about 25% in the last few years; pigments (which constitute the major cost of raw material) are on the rise; carbon black is going up; alcohol went up 5¢/gal. late last year; titanium-based pigments went up 1½¢ in February; alumina hydrate went up 1¢/lb. about the same time (from 18¢ to 19¢/lb.); news-ink oils cost 15¢/gal. more than they did a year ago; and transportation and labor costs have rocketed. Tin cans and steel pails also cost more—about 10%—than in '56.

Most ink makers, although they are reluctant to increase prices, don't believe that price hikes would stop the surge in the use of inks. Whether it be for packages or publications, the need for inks is on the rise. There seem to be few trends in our economy that could halt that rise.



Greenwood Mills ups boiler efficiency to 90% burning coal the modern way

Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

When its original power plant could not keep up with growing steam demand, Greenwood Mills, Greenwood, S. C., studied the problem and decided to replace the old facilities.

Greenwood's engineering and construction departments, working with Consulting Engineer Frank Hill of Greenville, designed and built a completely modern power plant. It features a pressurized 300,000 lb./hr. boiler equipped with two cyclone furnaces burning ¼" x 0" coal. Automatic throughout—from coal conveyors to pneumatic combustion control to hydraulic ash handling—the system is manned by a minimum of operators. Burning coal the modern way has resulted in a trouble-free boiler plant operating at a combustion efficiency of 90% or better.

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

BITUMINOUS COAL INSTITUTE
Southern Building • Washington 5, D. C.

NEW YORK'S RCA BUILDING: Evolving at RCA, a plan to raise home-grown engineering executives.

Where Engineers Learn to Be Managers

A two-pronged training plan aimed at developing more better-qualified executives "from within" a company and easing present or prospective shortages of technical manpower is evolving in a company that employs an even higher percentage of engineers than do chemical process firms.

The management-training-for-engineers program underway at Radio Corp. of America may well turn out to be a decisive factor in the company's over-all destiny. But it bears on a problem that could be of life-or-death importance to chemical process companies, in which the proportion of engineers and scientists is now mounting to 10% of the industry's total personnel.

Two-Way Approach: RCA—where the ratio of engineers to production workers has jumped from less than 5% in 1947 to more than 14% now—takes the view that selected forms of management training can improve utilization of engineering employees in at least two ways:

(1)—Engineers who have aptitude and ability for managerial work can develop skills that are needed to weld an assortment of engineering talents into an effective, hard-hitting team.

(2)—Engineers who prefer to concentrate on technology and want to advance on the basis of their professional engineering skills and achievements can gain an appreciative understanding of management aims and needs, thus enhancing the company's management-engineering teamwork.

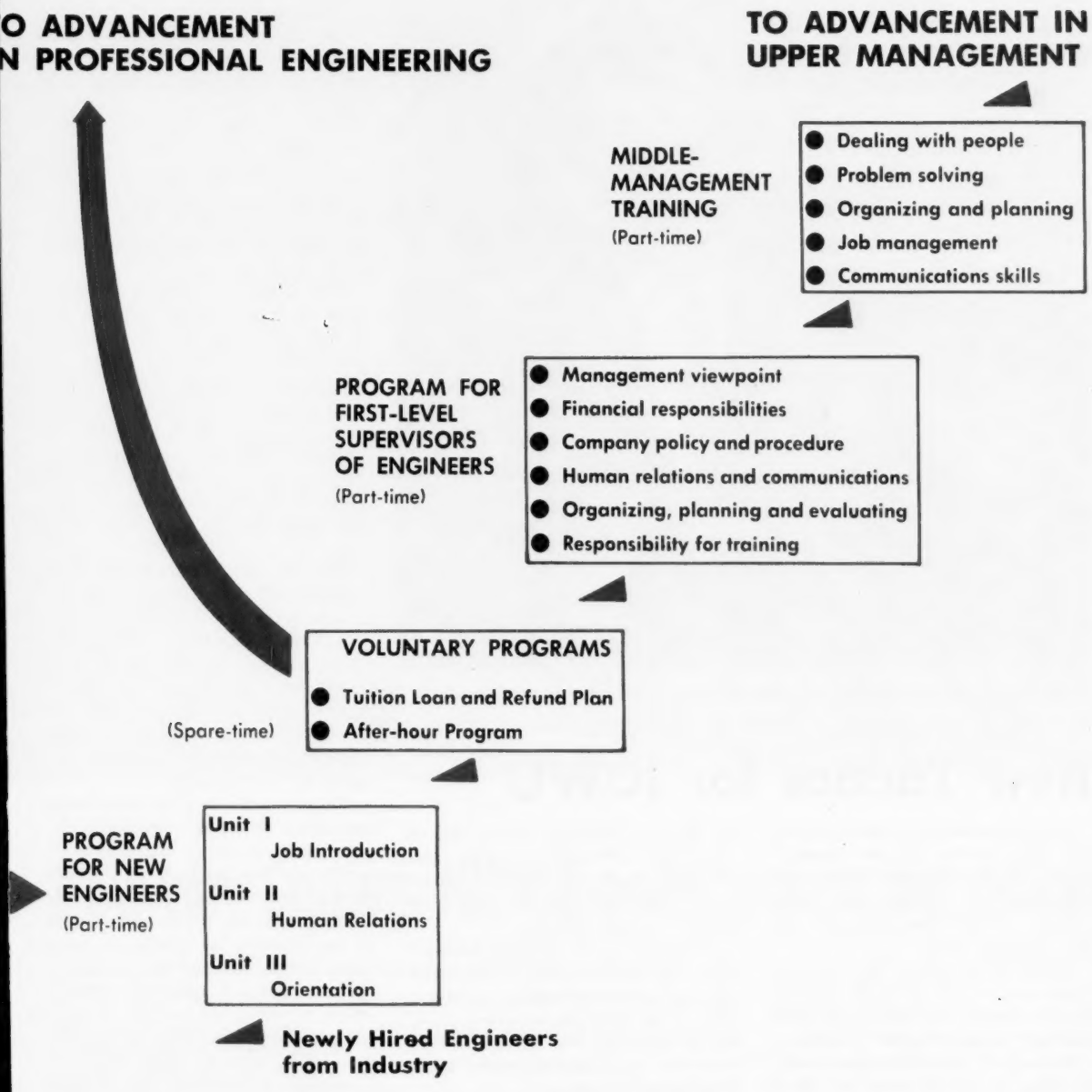
SPECIALIZED TRAINING PROGRAM
(Full-time)

- 1-week orientation
- 20-week rotating assignments to various engineering activities
- 31-week engineering assignment with on-the-job-guidance

Recent College Graduates

In addition, this training program serves as the start of preparations for those engineers with particular administrative ability who—sooner or later—are likely to be moved up into top management positions.

Every Engineer a Trainee: Riding herd on RCA's engineer-training program is an engineering-training committee that reports to the corporation's manager of training. Represented on that committee is each of the RCA divisions employing significant numbers of



engineers. The committee works with, and through, personnel relations managers on the corporate, divisional and plant levels.

Management training—not counting the elementary principles discussed in the orientation phase of the "specialized training program" for engineers hired directly from college campuses—begins in the second step, called "basic training program for new engineers" (*see chart, above*).

More advanced and detailed management training is given in the "training program for first-level supervisors of engineers." Engineering supervisors who are promoted to group manager positions then take the "middle management training program."

Partial proof of the value of this training is already discernible. Within the past two years, with the electronics industry expanding at twice the growth rate of the country's gross national product, there were 116 new faces in one large division's engineering management—and only 23 of those men were hired "from the outside." On top of this, RCA reports that the training program has proved an asset in college recruiting, has helped hold down engineer turnover, and has generally "widened our corporate horizons."

MITCHELL: Once antiunion, new chemical labor chief seeks to develop . . .

New Tactics for ICWU

New bargaining and organizing tactics being drafted by the country's largest all-chemical labor union will help bring this industry's nonunion and independent union employees into the AFL-CIO fold.

This is the prediction and intent of 39-year-old Walter Mitchell, starting his sixth month as president of International Chemical Workers Union.

Mitchell—a chemical union member since he went to work at a Tennessee Valley Authority phosphates and nitrate plant at the age of 15—insists that the feud that crackled within the ICWU executive board last winter has been patched up.

"We fought it out when I took office, then shook hands and started working together," Mitchell says.

Alabama-born and Georgia-educated Mitchell—who once (as a 14-year-old cotton mill worker) resisted unionism himself—is well aware of the hurdles in the paths of the chemical labor unions. But he asserts that his union is building a new kind of unionism—"thoroughly clean and efficient"—that will attract the relatively well educated and intelligent workers in this industry.

This new kind of unionism, Mitchell says, will include calmer and more rational bargaining based on collection and use of pertinent economic data, and low-pressure organizing based on economic logic and improved communications techniques.

Mitchell intends to continue to cooperate with Oil, Chemical & Atomic Workers (AFL-CIO) in multiplant bargaining councils and in carrying out an independent but coordinated organizing plan. Also, he says he'll continue to explore possibilities of an ICWU-OCAW merger; but declares that ICWU won't sit idle waiting for such a merger.

Mitchell's long-range goal: "One strong, progressive and militant union working for the benefit of all chemical workers in the U.S. and Canada."

LEGAL

Bankruptcy Suit: Consolidated-American Industries (Montgomery, Ala.)—facing a lawsuit for payment of a total of $217,000 claimed to be due on oil concessions and Mexican sulfur royalties—has been adjudged bankrupt.

The bankruptcy suit was filed in district court in Montgomery, and has been referred by U.S. District Judge Frank Johnson to a referee in bankruptcy, Leon Hopper.

The Montgomery firm and its president, State Sen. Garrett Van Antwerp of Mobile, were recently named as defendants in a mismanagement suit filed in federal court in Birmingham.

In connection with the royalties suit, which was filed on behalf of citizens of Mexico and Panama by Marvin Weaster, of Texas, Judge Johnson recently refused to restrain sale of royalties by Con-Am.

•

Fluoride Fumes Suit: International Minerals & Chemical Corp. (Chicago) has been named defendant in four suits filed in federal court at Columbia, Tenn. The suits charge that fluoride fumes from the firm's Wales, Tenn., plant caused damage to crops and livestock in the area. Additional suits against the company are being prepared by local farmers.

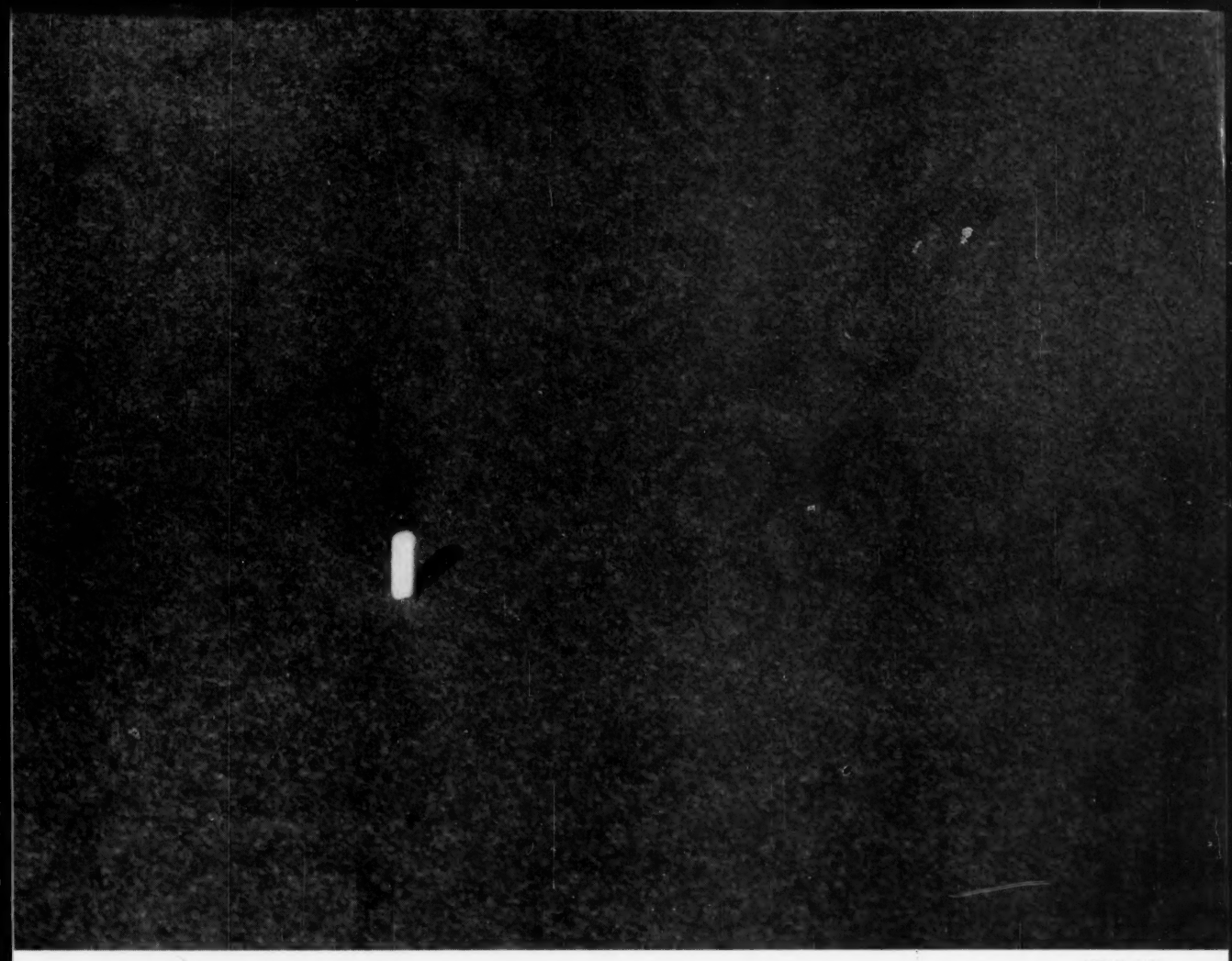
Defending the plant's manufacturing procedure as being "essentially the same since operations began 30 years ago," the superintendent, Charles White, said that on days when the smoke from the plant hangs close to the ground, "we practically close down our production." He added that the company has spent $250,000 in efforts to reduce the amount of fluoride released in the air.

•

Rolaids Advertising: The Federal Trade Commission a fortnight ago issued its first detailed complaint against allegedly false and misleading advertising on television.

The complaint charges the maker of Rolaids—a patented alkalizer in tablet form produced by American Chicle Co. (Long Island City, N.Y.)—with using TV advertising to disparage competitors unfairly and to misrepresent that the product has the general endorsement of physicians.

The charges against the antacid grew out of investigations carried out by



ACTUAL SIZE

How tiny Sodium Nitrite pellet solves big problem

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ICC-approved fiber drums now replace coopered barrels for shipments of 150 and 400 lbs. net. The larger drums are 15% smaller in size, 24% lighter in weight and a much more convenient shape than the outmoded barrels. They're easier to handle, more economical to ship and can be stacked closer together and higher, thus saving valuable storage space.

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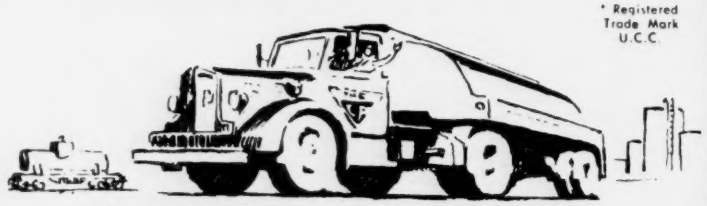

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CHEMICAL WEEK BUYERS' GUIDE

Published September 14
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Catalog Inserts August 1

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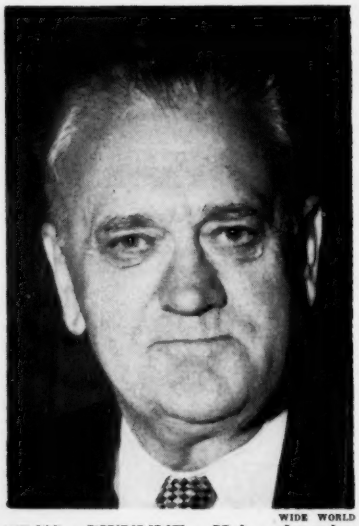

WIDE WORLD

FTC'S GWYNNE: He's clamping down on radio and television 'ads.'

the commission's new radio and TV monitoring unit. Recently, FTC Chairman John Gwynne announced the unit's first complaints against deceptive commercials, but the charges against Rolaids are the first to go into alleged visual deception.

The complaint cites several scenes in the commercial, including one aimed at showing viewers that concentrated stomach acid is "capable of burning a hole in a cloth napkin." FTC said its research showed that the mild hydrochloric acid normally found in the stomach "is not capable of burning a hole in a cloth napkin."

An FTC examiner will now hold hearings on the complaint.

LABOR

Pensions Going Up: Another large chemical company is increasing its pension and insurance benefits for employees. Canadian Industries Ltd. (Montreal) is offering a new group life insurance plan and is revising the noncontributory pension plan so that minimum payments to employees retiring with 20 or more years' service will be $100/month. CIL's president, H. Greville Smith, explains that while July 1 is the intended effective date for both changes, the new life insurance plan is contingent on its approval by 75% of the company's more than 7,000 employees.

•

Radiation Claim Rejected: In the first case of this kind in Ohio, the

state's Workmen's Compensation Bureau has denied a claim for alleged disability due to atomic radiation. A maintenance machinist at the Atomic Energy Commission's Fernald installation near Cincinnati asserted that he was exposed to excessive radiation while repairing thorium pots that were not completely decontaminated. Dr. Joseph Quigley—medical director of National Lead Co., which operates the plant for the government—read from the individual's radiation exposure record, stating that the man had received substantially less radiation than the tolerance level set by the National Bureau of Standards. Two other cases of this nature are still pending.

•

Two Views on No-Union Vote: Divergent views on significance of the recent representation election at Minneapolis-Honeywell Regulator Co. —in which engineers voted against unionization by either Engineers & Scientists of America or by the AFL-CIO's United Auto Workers (*CW Business Newsletter, May 18*)—come from ESA's president, Joseph Amann, and from Robert Rhinehart, president of the National Society of Professional Engineers.

Rhinehart says the poll confirms the soundness of NSPE's policy that holds that unionism and professionalism are incompatible: "It is our sincere hope that what happened at Minneap-

ANNETTE & BASIL ZAROU

CIL'S SMITH: Another company boosts pension, insurance benefits.

Excerpts From The Chemical Hall of FAME

Victor Grignard

(1871-1935)

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Opening for research and development chemist experienced in the manufacture and various uses of protective coatings, wax, wax compounds, resins, polymer dispersions, plastic, and bituminous materials in industrial manufacturing company laboratory located in Middle West. Apply by letter giving full details of education and experience. All replies will be confidential. P-5213, Chemical Week.

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President, Agricultural Chemical Manufacturing Company, with 15 years experience, research development, sales and management, desires position in management or sales in foreign field. Experience in South America and Africa. Chemistry, Entomology, Plant Pathology, Doctorate Training. PW-5123, Chemical Week.

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1	735	10′ 6″	37′ 3″
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olis, after a long and hard struggle, will dispel once and for all the idea that the professional engineers of this nation will ever adopt a concept alien and antagonistic to their professional obligations and ideals."

Amann—who headed the former collective bargaining group for Minneapolis-Honeywell engineers before becoming full-time president of ESA—credits the company with "an excellent job of convincing its engineers and scientists that there is actually substance to the promises they made." But he predicts that the company's new engineer-relations program will not succeed, and that the engineers "will again turn to collective bargaining when they learn that the company cannot deliver on the promises it made during the campaign."

KEY CHANGES

C. R. Porthouse, to director, Alco Oil and Chemical Corp. (Cleveland).

Marion B. Geiger, to director of general development, Hooker Electrochemical Co. (Niagara Falls, N.Y.).

C. Kenneth McCracken, to vice-president and controller, Procter & Gamble Co. (Cincinnati).

Paul G. Freeman, to vice-president, Freeman Industries (Tuckahoe, N.Y.), fine-chemical manufacturers and processors.

Frank J. O'Brien, Jr., and **B. W. Weber,** to vice-presidents, Tin & Chemical Corp., a subsidiary of Metal & Thermit Corp.

Hugh W. Sloan, to vice-president, St. Regis Paper Co. (New York).

Arthur J. Stock, to research and development manager, Acheson Colloids Co. (Port Huron, Mich.).

Paul M. Goodloe, to director; and **Mrs. J. L. Spiegelhalder,** to treasurer; Kenrich Corp. (Maspeth, N.Y.), manufacturing chemists.

Roy L. Rollins, to vice-president, A. E. Staley Mfg. Co. (Decatur, Ill.), corn and soybean processors.

George B. Foote, to treasurer, Baird-Atomic (Cambridge, Mass.).

Harmar Brereton, to vice-president and general counsel; and **William F. Shepard,** to secretary, Eastman Kodak Co. (Rochester, N.Y.).

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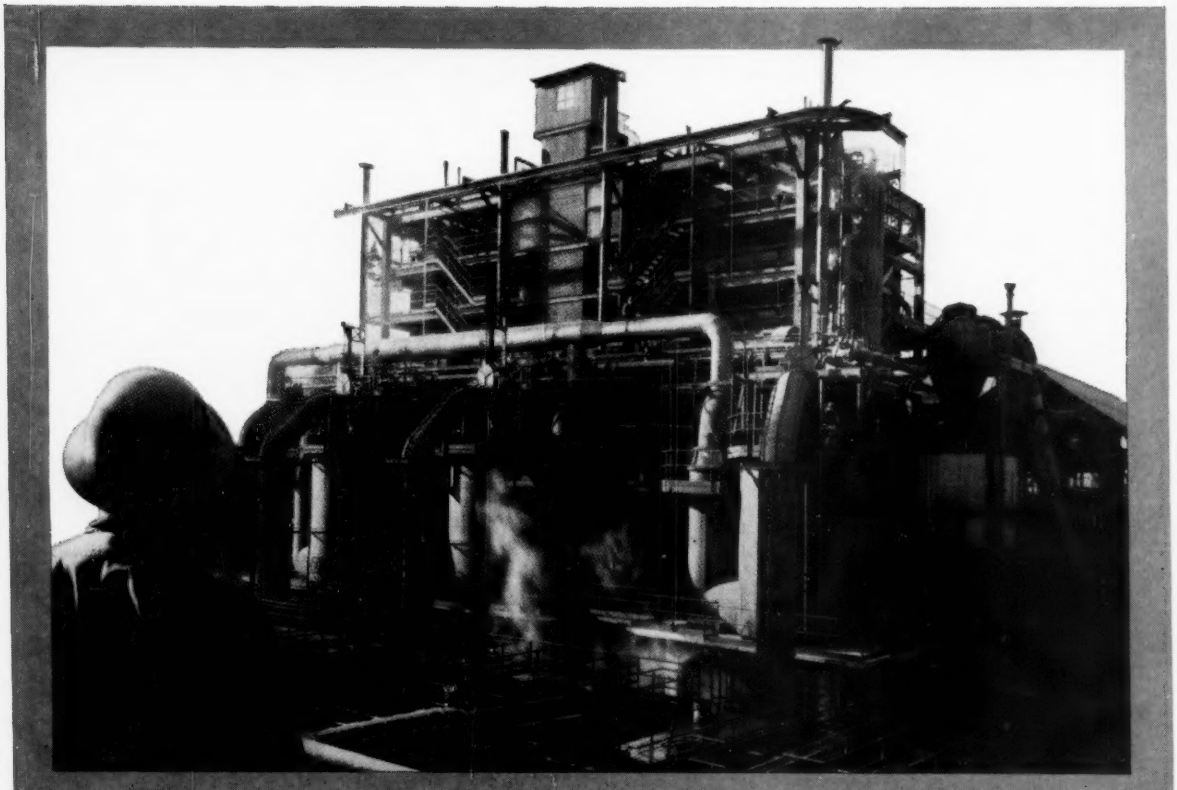

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